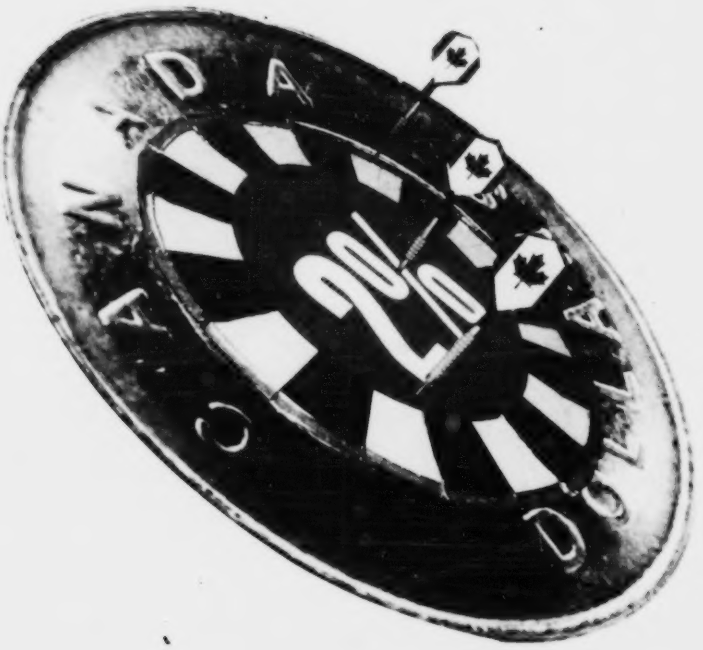
Two Percent Target

Canadian Monetary Policy Since 1991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C.D. Howe Institute

David E.W. Laidler and William B.P. Robson

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Two Percent Target

The Context, Theory,
and Practice of
Canadian Monetary Policy
since 1991

David Laidler
William B.P. Robson

Policy Study 37

C.D. Howe Institute

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Foreword

More than ten years have passed since the C.D. Howe Institute published *The Great Canadian Disinflation: The Economics and Politics of Monetary Policy in Canada, 1988–93,* David Laidler and William Robson's Douglas Purvis Award-winning study of the Bank of Canada's efforts to re-establish a stable monetary environment after some two decades of high and volatile inflation.

In 1993, Canada was slowly emerging from the painful recession that had accompanied the monetary squeeze at the beginning of the decade, and inflation targeting was a recent innovation. At that time, monetary policy was a topic of acrimonious political discussion. Not only was the new targeting regime untried, but it was vulnerable to pressures from serious fiscal imbalances, and political developments seemed to threaten even the limited policy autonomy the Bank of Canada needed to implement it.

It is hard now to recall the charged atmosphere that surrounded monetary policy debates at that time. While financial-market participants continue to watch central bank actions closely, public interest in the topic has ebbed, and the third renewal of inflation targets in 2000 passed almost without comment. This new state of affairs arises, in large measure, from the success of the same policies that created so much controversy earlier. Inflation was already low in 1994, and it has remained there since, to the point that most Canadians take its continuation for granted; the Bank of Canada probably commands more public respect than at any time since the mid-1950s; the fiscal situation has improved; and, remarkably, the recession of 1991–92 has as yet had no successor.

In their new book, Laidler and Robson explore this remarkable transition, and document monetary policy's role in bringing it about. While inflation targeting does not deserve all the credit for the Canadian economy's successes of the past decade, Laidler and Robson argue that it played a key role in establishing a background of monetary stability that underlay them. At the same time, they note serious macroeconomic problems that remain unsolved —

Canada's disappointing productivity performance relative to the U.S., and the sometimes disconcerting instability of the Canada-U.S. dollar exchange rate, to give two examples. They also warn that the unobtrusiveness of Canada's successful monetary policy regime does not render it politically secure, and they make a strong case for maintaining and, if possible, strengthening it. Above all, Laidler and Robson show we can learn as much from policy successes as from failures. If the economic circumstances in which their new book appears are less dramatic than those of a decade ago, the lessons from this latest transition are every bit as important and interesting as those of its predecessor.

The C.D. Howe Institute's first study of monetary policy, Thomas J. Courchene's *Money, Inflation and the Bank of Canada: An Analysis of Canadian Monetary Policy from 1970 to early 1975*, documented the onset of the great inflation that dominated Canada's monetary history in the final quarter of the last century. We can hope that this latest addition to the series will turn out to document the first decade of a new era of monetary stability.

While the analysis and opinions in this book are the responsibility of its authors and do not necessarily represent the views of the Institute's members or directors, it exemplifies the C.D. Howe Institute's mission to promote understanding and debate on matters of national interest by presenting views soundly based on economic theory and careful empirical research.

Jack M. Mintz
President and
Chief Executive Officer

Preface

Monetary policy is both one of the simplest and one of the most complex fields of economic policy. The daily operations of Canada's central bank are, at bottom, straightforward — the Bank of Canada controls the cost of very short-term funds to Canada's banking system. Yet that activity has important indirect effects on such key variables as long-term interest rates and the exchange rate, and on the growth of credit and money in the Canadian economy — which, in turn, affect volumes of spending and hence real incomes and employment, as well as the rate of inflation.

These indirect effects matter enormously to Canadians generally and often inspire controversy. The goals the Bank of Canada should pursue — the current inflation target, a different inflation target, or some other objective altogether, such as a fixed value for the exchange rate or a high level of employment — and the tactics it should use to achieve those goals generate disagreement among economists and the public alike. Our purpose in writing this volume is to explore the nature and conduct of Canadian monetary policy from the early 1990s to the early 2000s in a manner that bridges the gap between the simple core of the Bank's operations and the complex ways they play out in the economy and hence in debates about the direction of Canadian society.

Some of this analysis and narrative draws on our earlier work, including our 1993 book *The Great Canadian Disinflation*. We have, however, tried to make this a free-standing volume: we provide references for readers who wish to follow up specific subjects in more detail, but such further inquiry is never essential. We hope our description and analysis of the Bank's actions and their consequences will be interesting and useful for students of monetary policy in Canada, both those for whom it is a matter of professional concern and those for whom it is of more formal academic interest.

We have tried to make our account of Canadian monetary history over the past dozen years or so reasonably accessible to nonexperts. True, the discussion of the economics of monetary policy in Chapter 3 will be easier for readers with some background in monetary and macroeconomics, and Chapter 6, on the framework for the Bank of Canada's conduct of policy, will be of most use to readers whose interest lies in the high-frequency interaction of the Bank's actions and statements with financial markets. In general, however, the principal prerequisite for useful perusal of this book should be, not technical expertise, but interest in Canada's experience since the early 1990s and the economic and political influences on monetary policy that helped shape it.

Because monetary policy inspires controversy, we think it fair to warn at the outset that, while we seek to avoid polemics and to give fair accounts of points of view that differ from ours, we do take several positions on which there is no consensus.

To begin with, while Canada was only one among many countries to experience a lasting reduction in inflation in the 1990s, our view is that the major common force here was the spread of ideas about what domestic monetary policy can and should do, rather than the competitive pressures generated by increasing globalization or some other external force. We hope we have paid adequate attention in what follows to developments in the world economy as they have affected Canada, but our narrative reflects and also, we hope, supports the opinion that, in the modern world, domestic monetary policy still matters a great deal. This judgment, rather than simple parochialism, leads us to believe that the study of monetary policy in a single country such as Canada is worthwhile.

Our belief that domestic monetary policy's influence remains important also informs our judgment that those who make such policy must be accountable in a meaningful way to the electorate whose lives their decisions affect. Political control over central banking is a sensitive subject — to us, respect for democratic principles does not imply that elected politicians should set interest rates, but neither can we defend leaving responsibility for setting fundamental goals such as the behaviour of the price level solely to the Bank of Canada. This consideration also strongly shapes our views on Canada's international monetary relations. To us, the choice of whether or not to seek some kind of North American monetary union raises not just technical questions about competing exchange rate regimes, but also political questions about the accountability of policymakers to those they serve.

In some places, too, our views on technical issues in the conduct of monetary policy are at odds with those of other observers. We are convinced, for example, that the interaction between the supply of and the demand for money plays a key role in the transmission of central bank policy to the economy. We further believe that this view is supported by abundant empirical evidence of a close long-run correlation between money growth and inflation, and of shorter-run relationships in which variations in money growth precede the output and inflation rate fluctuations associated with them. These considerations have led us to treat the instability in the demand for various monetary aggregates that has been evident at times in Canada and other economies since the early 1980s as a complication in analyzing money's role in monetary policy processes, rather than a justification for ignoring it. Therefore, the stock of money plays a larger role in our story than is nowadays fashionable.

Other points of controversy — for example, the sources of movements in the foreign exchange value of the Canadian dollar and how much attention the Bank of Canada should pay to those movements — will also become apparent throughout the book. We do not apologize for having a point of view, but we do hope we have succeeded in presenting that point of view, and some alternatives to it, fairly and without rancour. If we have succeeded, we trust our look at the debates over the tactics and goals of monetary policy in Canada will illuminate several outstanding issues that will continue to cause controversy in the years ahead, and perhaps assist Canadians to confront them successfully.

Last but hardly least, we are delighted to acknowledge the able assistance and wise counsel of many collaborators and reviewers. Our colleagues at the C.D. Howe Institute, Payam Pakravan, Yvan Guillemette, and Jan Moffatt, helped us find source documents and data. Lloyd Atkinson, John Crow, Charles Freedman, David Johnson, Leigh MacDonald, Michael Parkin, Andrew Spence, Gordon Thiessen, and a number of anonymous officials and reviewers made copious suggestions for improvement. The controversy that surrounds many issues related to monetary policy makes it all the more appropriate for us to emphasize that none of these reviewers necessarily endorses the positions we have taken — for those positions, and for any errors that remain, we alone are responsible.

David Laidler
William B.P. Robson

PART I

Introduction and Overview

1

Canadian Monetary Policy and Its Background since the Early 1990s

At the beginning of a book on Canadian monetary policy, readers might like reassurance that the subject merits their attention. Does monetary policy matter? If it does, how does it matter? A short outline of Canadian economic experience since the early 1990s can, we think, easily demonstrate the power of monetary policy to influence not only the short-term course of spending, output, and employment in the Canadian economy as a whole, but also the longer-term path of prices and, indeed, of the country's overall prosperity.

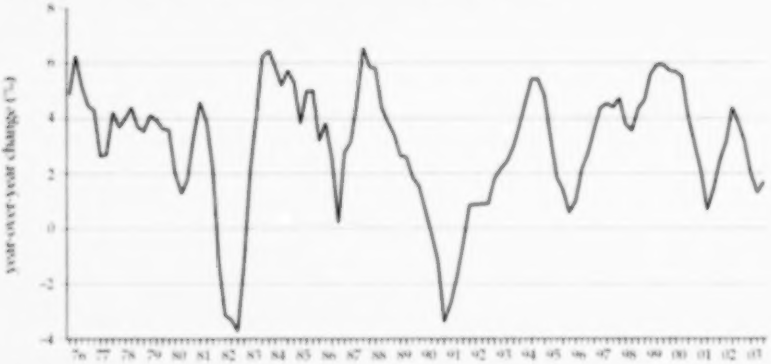
A Brief Macroeconomic History

For the Canadian economy, the 1990s began badly yet ended well. Canada, like much of the rest of the developed world, prospered during the late 1980s. In 1990, however, the country entered a recession that, by some measures, was the worst since the 1930s.

Output, Employment, and Inflation

After a lengthy period of growing prosperity, spending and output contracted sharply in 1990, with a peak-to-trough decline in activity

Figure 1: ***Growth of Real GDP, Canada, 1976–2003***



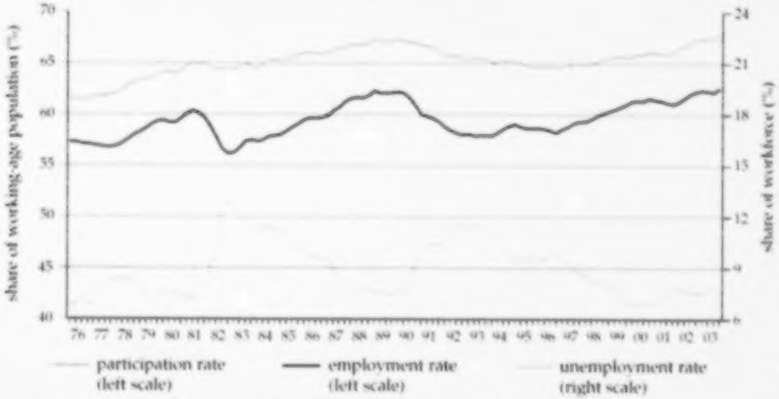
Source: Statistics Canada, CANSIM database, table 380-0002.

as measured by real gross domestic product (GDP) of some 3 percent. The economy began to grow again in 1991, though only tentatively, and the recovery gave way before long to renewed weakness; only after 1996 did the expansion begin to look and feel secure. (See Figure 1.)

The unemployment rate — the proportion of Canadians in the workforce but unable to find work — jumped from less than 8 percent to more than 11 percent between 1990 and 1992 and did not return to single digits until late 1994; only in 1999 did the unemployment rate regain the levels of the late 1980s. Rates of labour force participation and employment — the proportion of Canadians of labour force age who were, respectively, in the workforce and actually employed — were even slower to return to their prerecession levels. In the wake of impressive job gains from 1997 to early 2003, however, those rates hit new highs, and the unemployment rate fell to the 7 percent range, a level not seen for a sustained period since the early 1970s. Only after early 2003 did new softness in the economy curb job growth and induce a mild increase in the unemployment rate. (See Figure 2.)

Inflation, as measured by the year-over-year change in the consumer price index (CPI), moved up in the late 1980s and spiked at

Figure 2: ***Rates of Employment, Participation, and Unemployment, Canada, 1976–2003***



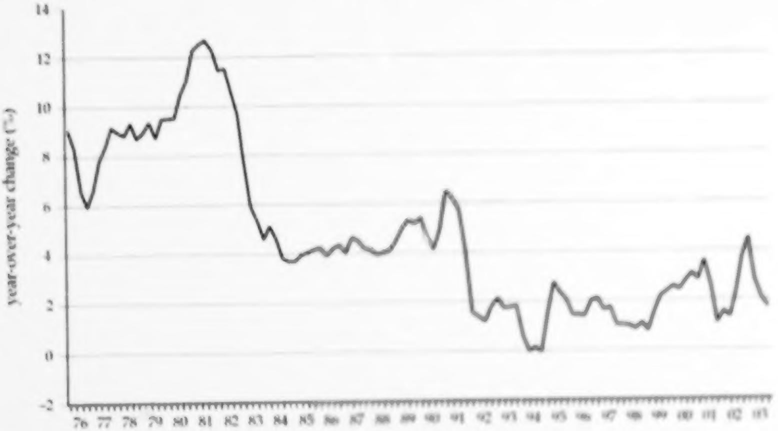
Source: Statistics Canada, CANSIM database, table 282-0087.

a rate above 6 percent at the beginning of 1991 with the introduction of the goods and services tax (GST) (Figure 3). Inflation then fell precipitously a year later to a little under 2 percent, due mainly to the recession but also to the impact of the introduction of the GST on the price level's dropping out of the 12-month measure of its rate of change after a year. Year-over-year inflation would remain low for the balance of the decade, not exceeding 3 percent again, even in a single month, until late 2000.

Public Finances

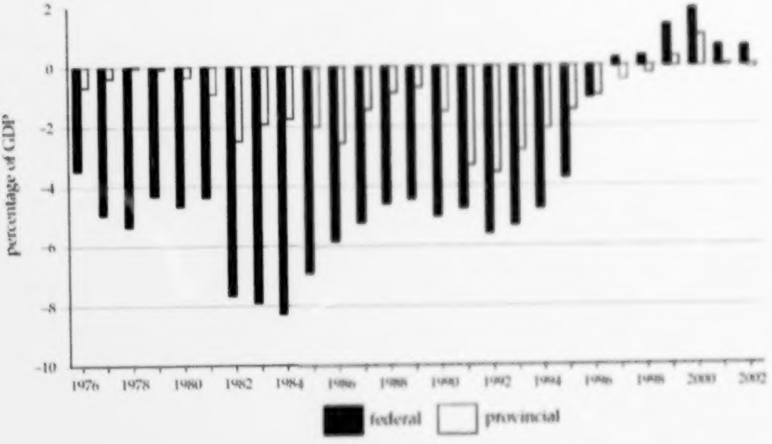
The state of Canada's public finances also changed dramatically in the 1990s and early 2000s. During the relatively prosperous second half of the 1980s, federal and provincial budget deficits were so large (see Figure 4) that even healthy growth in nominal incomes and expenditures did not reduce the ratio of public debt to GDP (Figure 5). The fiscal situation worsened sharply under the influence of the early 1990s' recession, and it was only in the mid-1990s — with the landmark federal budget of 1995 marking the key turning point — that retrenchment put fiscal policy on a sustainable

Figure 3: ***Consumer Price Inflation, Canada, 1976–2003***



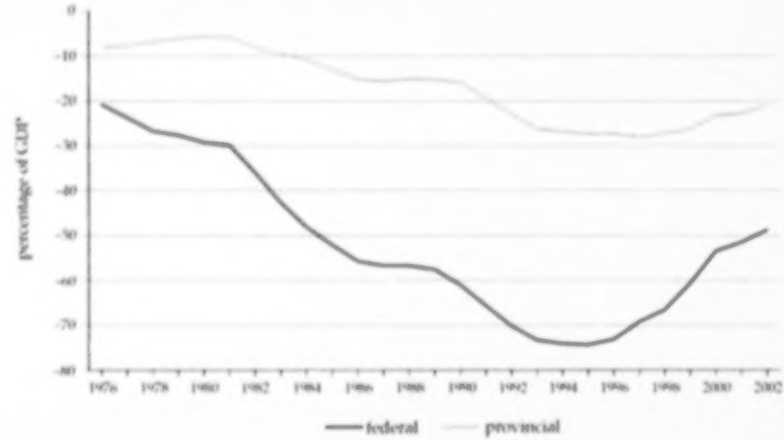
Source: Statistics Canada, CANSIM database, table 326-0001.

Figure 4: ***Federal and Provincial Budget Balances, 1976–2002***



Sources: Canada, Department of Finance, Fiscal Reference Tables; provincial budgets.

Figure 5: *Federal and Provincial Government Net Assets, 1976–2002*



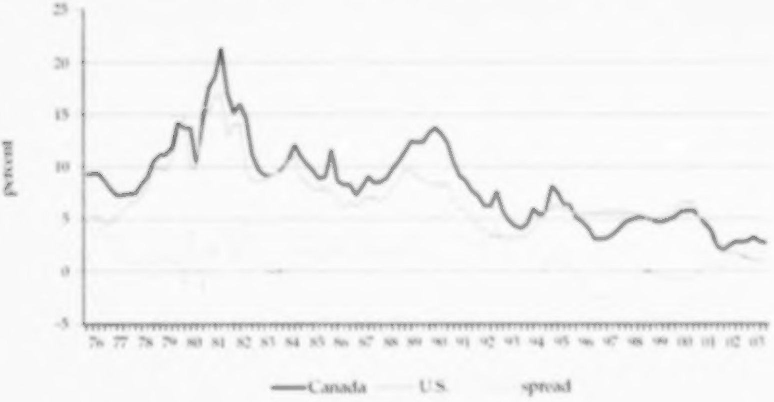
Sources: Canada, Department of Finance, Fiscal Reference Tables; provincial budgets.

track. The ratio of public debt to GDP shrank during the second half of the 1990s almost as rapidly as it had grown ten years earlier, and it continued to fall in the early 2000s.

Interest Rates and the Exchange Rate

Interest rates bear witness to the bad economic times that prevailed at the beginning of the 1990s and to the substantial improvement after 1995. A large positive differential between Canadian and U.S. short-term interest rates in 1990 and 1991, associated with much tighter Canadian monetary policy, was reversed by the second half of the 1990s by the combined effects of lower Canadian inflation and the improving fiscal situation (Figure 6). The return of a small positive differential after the turn of the millennium had more to do with relatively stronger real growth in the Canadian economy at that time than with any revival of fears about inflation in Canada. Ten-year government bond rates (Figure 7) show a similar, though less dramatic, narrowing and, for a while, reversal of Canadian-

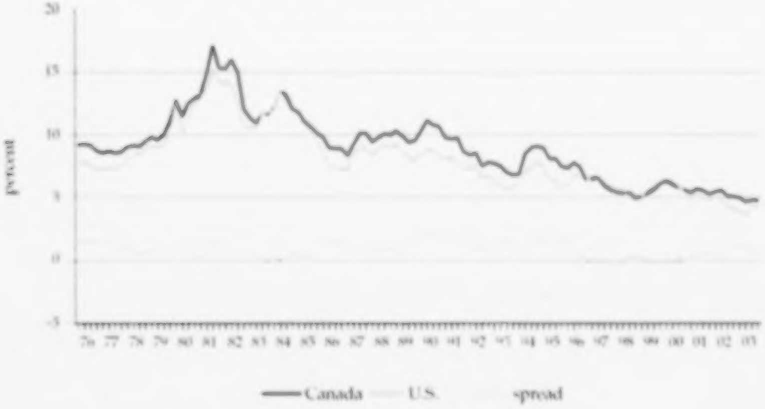
Figure 6: ***One-Month Interest Rates, Canada and the United States, 1976–2003***



Note: U.S. yields are adjusted to a 365-day basis.

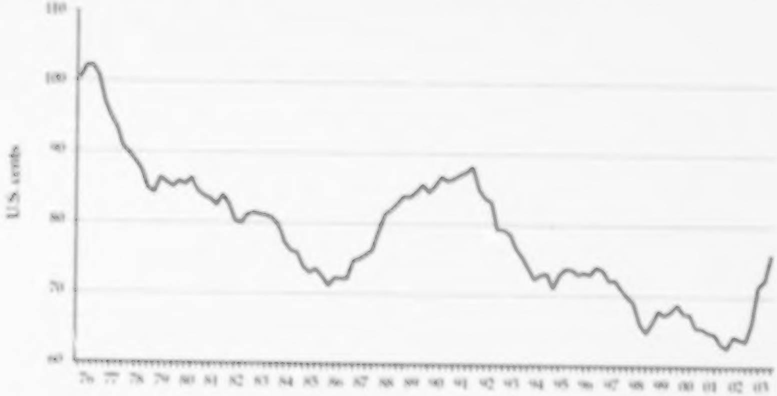
Sources: Bank of Canada; United States Federal Reserve.

Figure 7: ***Ten-Year Interest Rates, Canada and the United States, 1976–2003***



Sources: Bank of Canada; United States Federal Reserve (Canadian ten-year bond rates prior to mid-1982 are estimated from the synthetic yield for bonds with maturities of ten years and longer).

Figure 8: ***Canadian-U.S. Dollar Exchange Rate, 1976–2003***



Source: Bank of Canada.

U.S. spreads in the late 1990s. Figures 6 and 7 also show the effects of the Asian and Russian monetary crises in 1997 and 1998 and the accompanying flight of investors into the safe haven of U.S. government securities, as well as the return to stability by the end of the decade.

The only widely discussed variable that inspired as much concern at the end of the 1990s as it did at the beginning was the Canadian-U.S. dollar exchange rate. In the early 1990s, many commentators thought the exchange rate too high for comfort; as the decade ended, many thought it too low. The Canadian dollar appreciated from a level of around US$0.75 in the mid-1980s (it actually briefly dipped below US$0.70 in 1985) to a peak of US$0.89 in October 1991 (Figure 8), when the adverse effects of its appreciation on the competitive position of Canadian producers of tradable goods became a matter of acute concern. The exchange rate began to decline in 1992, and hit a new low of just over US$0.63 in late summer 1998, before stabilizing around US$0.66. In the early 2000s, the dollar reached another new low of just over US$0.62, prompting debate about the extent of and reasons for the currency's undervaluation that was just as intense as the debate in the early 1990s about its overvaluation. The rise in the exchange rate in 2002 and 2003, which restored it to the levels of the mid-1980s, did little to quell that debate. Instead, the focus of discussion shifted to general questions about the effects of exchange rate movements on the economy.

Explaining the Situation in 1990

At the beginning of the 1990s, the Canadian economy was in rough shape.[1] There were several reasons for this situation.

The Legacy of the 1980s

First, by 1990, Canada's fiscal situation had been deteriorating for 15 years or more. The slowdown in productivity growth in the early 1970s, the long-term nature of which did not become apparent until the 1980s, had rendered hopelessly optimistic the assumptions then underlying federal and provincial fiscal planning. These assumptions were deeply embedded, not only in the thinking of government officials, but also in what the general public believed government could provide and at what cost.

Second, after 1990 the implementation of the Canada-U.S. Free Trade Agreement (FTA) subjected many sectors of the Canadian economy to adjustment costs that, even without other disruptions, would have caused dislocations and, in all likelihood, a period of slower overall growth in output and employment. This adjustment was made harder by a commodity price boom in the late 1908s that put upward pressure on the Canadian-U.S. dollar exchange rate (Figure 9).

The single most important influence, however, on the economy, on the exchange rate, on inflation, and, therefore, on government budgets in the early 1990s was monetary policy. The 1980s had begun with a severe recession, as the Bank of Canada, already faced with double-digit domestic inflation, reacted to the impact of a severe U.S. monetary contraction on the Canadian-U.S. dollar exchange

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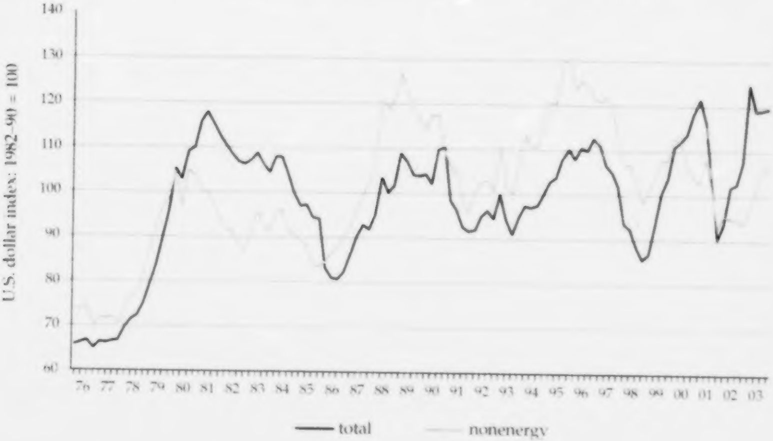
[1] Laidler and Robson (1993) deal with this period in considerable detail.

Figure 9: ***Prices of Canadian Commodity Exports, 1976–2003***



Source: Statistics Canada, CANSIM database, table 176-0001.

rate with an abrupt increase in short-term interest rates. This episode brought to a spectacular end the Bank's previous policy of gradualism, which had sought, with little success, to bring inflation down by gradually reducing the target for growth in a narrow measure of the money stock — net M1.[2] Having abandoned money growth targeting, however, the Bank did not replace it with a new policy, and in the 1980s the Bank's policy framework became eclectic and hard to read. With hindsight, a growing emphasis on price stability as a policy goal is discernable in the Bank's statements as the 1980s progressed. Not, however, until Governor John Crow's Eric W. Hanson Memorial Lecture in January 1988 — in which he explicitly declared that the re-establishment and maintenance of price stability would henceforth be the central goal of monetary policy (Crow 1988) — did this goal attract widespread attention.

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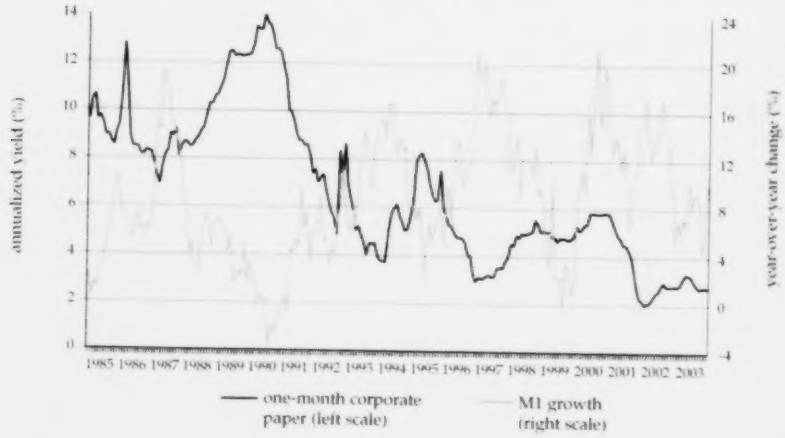
[2] Net M1 — cash and chequing accounts, adjusted for payments in transit — is a narrow measure of money that has proved over time to be a useful leading indicator of economic activity and appears to play a role in the transmission of monetary impulses to the economy. We explore its properties in Chapter 3. Courchene (1981) and Howitt (1986) discuss money growth targeting and its abandonment in some detail.

Tighter Monetary Policy

The Hanson lecture became a common reference point during the years that followed. In one sense, its prominence was not surprising — widely watched indicators of monetary policy such as short-term interest rates, as well as less widely watched indicators such as M1, showed clear evidence of tightening over the course of 1989 (Figure 10). At the same time, however, the Hanson lecture did not define a new monetary policy regime for Canada. Governor Crow made clear that the Bank saw the then-current inflation rate as unacceptably high, but he did not define "price stability" or describe the means to attain it or establish a timetable for doing so. For many, though not all, observers, the Hanson lecture appeared more a statement of determination to prevent further increases in inflation than a signal to break decisively with the past.

At the beginning of 1990, monetary policy became seriously contractionary. Paradoxically, the proximate cause of the squeeze was an attempt by the Bank of Canada to loosen the stance of policy. To many financial market participants — especially against a backdrop of rising long-term interest rates abroad — a brief downward move in short-term interest rates in early January 1990 indicated, not that the Bank thought its policy had been tight enough to put inflation on a downward course, but that its resolve to bring inflation down was weakening. A run on the currency sent the Canadian-U.S. dollar exchange rate down more than 2 U.S. cents in a couple of weeks and close to 4 cents by the end of the month. The Bank tightened in response, hiking the key Bank Rate — the rate of interest at which it provides overdraft facilities to the banking system — above 13 percent and holding it close to that level through the summer. As Figure 10 illustrates, narrow money growth — an indicator that played only a minor role in the Bank's assessment of the economy but that was signalling the economic downturn to come — also turned sharply negative after this episode.

Figure 10: ***Short-Term Interest Rates and the Growth of M1, Canada, 1985–2003***



Note: Observations for M1 growth are effectively centred six months earlier than they appear.

Source: Bank of Canada.

The Monetary Policy Regime in the 1990s

In 1990, the Canadian economy operated with a flexible exchange rate — indeed, it still does. The alternative, a fixed exchange rate, is a policy goal in its own right; monetary policy devoted to maintaining a specific price for the currency in the foreign exchange market cannot simultaneously aim at any other target. A flexible exchange rate, by contrast, is not a policy goal as such; it simply leaves the monetary authority free to choose among other policy goals.[3] In early 1990, therefore, there was no firm goal for monetary policy. The Bank of Canada had abandoned M1-growth targeting in 1982 and had been unable to find a suitable aggregate to replace it; "price stability," as the term was used in the Hanson lecture, was no replacement. The firm establishment of a policy goal cast in terms of price-level behaviour needed defining in quantitative terms and required a timetable for its achievement.

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[3] Some goals are, of course, more appropriate for monetary policy than others, a subject we take up in the next major section.

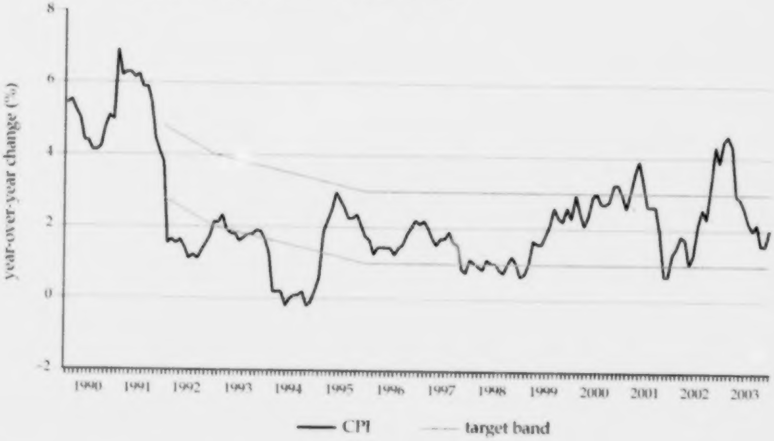
Inflation Targets

These deficiencies were addressed at the time of the 1991 budget by the joint announcement of "inflation reduction targets" by the finance minister and the Bank of Canada, which made Canada the second country, after New Zealand, to adopt such measures. The targets called for inflation, measured by the year-over-year change in the CPI, to fall gradually to 2 percent by the end of 1995. A permissible error band of plus or minus one percentage point around the central target acknowledged monetary policy's less-than-precise control over short-run fluctuations in inflation. The announcement also envisioned, albeit with no precise quantitative commitment, a further reduction in year-over-year CPI inflation to a rate "clearly below 2 percent" at some point in the future (see Bank of Canada 1991, 5). By the first quarter of 1992, the year-over-year measure of CPI inflation, by then no longer influenced by the introduction of the GST, was already below the bottom of the target range. From then until the first quarter of 1995, year-over-year inflation — further influenced for a 12-month period by a sizeable cut in cigarette excise taxes early in 1994 — averaged 1.2 percent, and for 29 of those 37 months was below the bottom of the target band (Figure 11).

Along with its economically painful consequences, the recession that caused this sharp disinflation contributed to the routing of Kim Campbell's Progressive Conservative government by the Liberals in the federal election of late 1993. Although the inflation targets themselves were not an explicit issue in the campaign, the overall tightness of monetary policy was a matter of contention, and the election coincided closely with the end the seven-year term of Bank of Canada Governor John Crow, who was personally identified in the public's eye with monetary stringency in pursuit of the Bank's "price stability" goal.

The doubts these circumstances cast on the future of Canadian monetary policy were, however, swiftly resolved. Although Crow

Figure 11: ***Consumer Price Inflation and the Target Band, Canada, 1990–2003***



Sources: Bank of Canada; Statistics Canada, CANSIM database, table 326-0001.

was not reappointed to a second term, his successor — the Bank's senior deputy governor, Gordon Thiessen — had participated in crafting the inflation targets and was known as a strong supporter. A joint statement from the new finance minister, Paul Martin, and newly appointed Governor Thiessen affirmed that much of the existing monetary policy regime would remain in place, the important amendment being the replacement of the tentative goal of a further reduction to "clearly below 2 percent" after 1995 with a commitment to maintain the 2 percent target, with its 1-to-3 percent band, until 1998. In the event, the 2 percent target, with its plus or minus one percentage point band, was extended for a further three years in 1998. Its further extension for five years in 2001 occasioned very little debate, although a further modification laid more stress on keeping inflation in the centre of the target range at 2 percent than had been the case earlier.[4] At about this time, too, the term "low inflation" began to replace "price stability" to describe the fundamental goal of monetary policy.

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[4] See Bank of Canada (1993-94). For the announcement of the renewal of targets in 1998, see Bank of Canada (1998b). A detailed discussion of the modifications made to the regime in 2001 is given in Bank of Canada (2001).

How much the 1993 changes to the inflation-targeting regime and the absence of further major changes in 1998 and 2001 matter is something we discuss below. For this introductory history, the important facts are, first, that the political underpinnings of a regime that targeted low inflation became bipartisan in 1993 and, second, that by 1998 inflation targets seemed to have become not merely uncontroversial but almost routine, and hence highly credible among the public.

The Role of the Exchange Rate

The introduction of inflation targets, however, did not herald an abrupt change in Bank of Canada procedures. The Bank kept at least one wary eye on the exchange rate for the rest of the decade. More than once, a downward move in the Canadian-U.S. dollar exchange rate that the Bank thought incompatible with either the fact or the credibility of continued low inflation provoked a tightening beyond what indicators of the domestic economy would justify. As we discuss later, persistent softness in the economy and undershooting of the inflation targets in the early to mid-1990s seem attributable to the Bank's concerns about the exchange rate.

From 1991 onwards, however, the fact that inflation targets were in place promoted a shift of policy focus toward the inflation rate and away from the exchange rate. Concern about the Canadian dollar's external value in policymaking circles and measures prompted by exchange-rate movements seem to have become less frequent as the decade progressed.

The Evolution of Monetary Policy Debates

Inflation targets provided the Bank of Canada with a clear monetary policy goal for the first time in a decade. Even so, although most people dislike inflation and many economists make a cogent case that it is harmful, initial support for the targets was not widespread, and many who favoured them did so with reservations.[5]

Questioning the Feasibility of Low Inflation

There were doubts about the feasibility of the goal of low inflation itself. Inflation had run consistently higher than 3 percent for more than 20 years when the targets were announced, and only a minority of Canadians had actually experienced inflation within the newly set limits during their adult lives. Since the early 1970s, low — let alone falling — inflation had been associated with a depressed real economy, an association to which the early 1990s added another painful example. Furthermore, Canadian inflation had tended to outrun US inflation since the 1960s, yet the new regime heralded a domestically determined inflation rate that would likely often be less than the rate prevailing south of the border.

By 1990, academic economists were beginning to reject older ideas that there was a tradeoff between inflation and unemployment that policymakers could exploit and that inflation arose from domestic "cost-push" factors or seeped in from abroad.[6] These ideas nevertheless lingered among the public at large and continued to motivate doubts about the feasibility of a low inflation target, especially one to be achieved over anything less than a very long period of time. Only experience that contradicted the misgivings these theories caused could put them to rest, and they played a role in policy debates until well into the 1990s.

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[5] See, for example, Robson (1991) and Laidler (1991). The discussions of the pros and cons of aiming for low inflation in Lipsey (1990) and York (1990) show how contentious this issue was at the turn of the decade.

[6] Though mainly of historical interest now, Bosworth and Lawrence (1982) illustrates the incorporation of "cost-push" ideas into what was then a mainstream framework. Nelson (2004) documents the dominant role played by these ideas in Canadian policy in the 1970s and early 1980s. He suggests that the severe recession, associated with tight money, that occurred in the early 1980s caused their influence on the actual conduct of policy to wane faster in Canada than it did in Australia and New Zealand.

The Monetary-Fiscal Mix

In its early years, opponents of the inflation control regime pointed to its inconsistency with the need to promote economic expansion to help fiscal policy get onto a sustainable course. Not only had chronic deficits pushed up the combined debt of the federal and provincial governments to close to 100 percent of GDP by 1990, but the maturity structure of Ottawa's debt was tilted heavily toward the short end, making a monetary policy induced slowdown especially troublesome to the fiscal balance.

Supporters of inflation targets met this case with two arguments. First, they suggested that success in controlling inflation would reduce inflation expectations, so that Bank of Canada policy ought to be characterized as seeking low inflation and low nominal interest rates, not low inflation and high nominal interest rates. Second, they argued that inflation had helped mask fiscal problems and that a low inflation environment would bolster governments' evidently weak resolve to address them.[7]

Low inflation did indeed bring low interest rates in its wake, and, importantly, the budgets of the mid-1990s eventually put fiscal policy on a more sustainable path. By the time the inflation targets came up for renewal and reassessment in 1998, the empirical basis for many earlier objections to the new regime had disappeared. The focus of debate during the run-up to this decision was not whether to renew the targets, but at what level to set them.[8]

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7 In the early 1990s, Pierre Fortin (for example, 1991, 1996) was a strong advocate of combining a tighter fiscal stance with more accommodative monetary policy. We argued (Laidler and Robson 1993), however, that tight monetary policy was likely to be helpful in persuading those responsible to pay more attention to the problems imbalanced budgets created.

8 See particularly the contributions of Fortin (1997); Howitt (1997); and Parkin (1997) to this debate.

Adjustment to Free Trade

A second focus of discontent with inflation targets was the coincidence of disinflation with the implementation of the FTA. For producers of tradable goods, especially in sectors where the FTA had reduced tariff protection, the currency appreciation that accompanied the tightening came at a most inopportune time, intensifying adjustment pressure they would have faced in any case. Many observers feared that even a temporary loss of competitiveness resulting from the higher dollar, along with general economic and fiscal distress, might shift investment south of the border and launch Canada into the free trade area with a long-lasting handicap.

With the passage of time, however, these concerns abated. The high dollar, though unhelpful for the competitive position of Canadian businesses as far as operating costs were concerned, had the salutary effect of making imported capital equipment less expensive. Businesses that re-tooled during this period enhanced the competitiveness of their products when the dollar subsided again. More fundamentally, the resumption of growth later in the decade and the development of new and sometimes unexpected areas of comparative advantage for Canadian exporters made the discomfort of the high dollar look more like a temporary setback than a permanent liability for Canadian industry.

Low Inflation, the Labour Market, and the Exchange Rate Regime

There was also debate about the nature of the inflation targets themselves. At one extreme, some economists, such as Parkin (1997), argued for restating the targets in terms of the price level, rather than the inflation rate, to prevent "base drift." Others, such as Fortin (1997), who worried that labour market frictions dictated a permanently higher level of unemployment at a 2 percent inflation rate than at, say, 4 percent, accepted targets specified in terms of the inflation rate, but wanted a higher range. Exchanges about these issues generated some academic heat, but the general public found little excitement in them, and the joint announcement in 1998 by the Bank of Canada and the finance minister of the renewal of existing arrangements for a further three years went almost unnoticed.

By 1998, then, seven years after a rough launch into a skeptical environment, inflation targeting was evidently working. And with government debt no longer rising relative to the level of output and threatening future "monetization," the targets were also becoming increasingly credible.

In the late 1990s, however, further developments prompted new doubts about the monetary regime. First, the Asian crisis of 1997 triggered a wave of international financial instability that culminated in Russia's default in August 1998 and the near-collapse of the New York-based Long-Term Capital Management "hedge fund" in September 1998. The resulting flight to quality in international capital markets drove up the U.S. dollar against other currencies, pushing the Canadian dollar to a then-record low just above US$0.63. With the Canadian dollar's temporary surge in value in the late 1980s and 1990s well in the past, this drop appeared to many as the latest stage in a long-term decline that seemed to indicate fundamental problems with the Canadian economy. A particular focus of concern was an apparently widening gap between U.S. and Canadian productivity levels and the possibility that the exchange rate not only was reflecting, but also contributing to, that gap. Then, in January 1999 came the launch of the euro, the new currency of a European Monetary Union. As the launch date approached, the currencies of the Union's future members, notwithstanding the effects of the Russian crisis, remained strong against those of North America. It was natural to wonder whether North America might have something to learn from Europe about monetary arrangements.

These two influences lent impetus to vigorously stated and widely publicized arguments that Canada should abandon its flexible exchange rate for some sort of fixed rate arrangement against the U.S. dollar. Advocates of a fixed rated suggested such ideas as a pegged Canadian-U.S. dollar exchange rate, the creation of a currency board based on the U.S. dollar, adoption of the U.S. dollar as Canada's national currency, or even a full North American Monetary Union on the European model. Most advocates of a fixed rate seemed to agree that exchange rate flexibility in general, and the Canadian dollar's long-term depreciation more particularly, were undermining Canadian productivity and living standards.[9] And, since inflation targets are not compatible with a fixed exchange rate of any kind, these arguments explicitly or implicitly rejected inflation targets as an inferior regime.

Current Debates

At the time of writing, there is still a good deal of life in some of these debates. There are, for example, questions related to the virtues of current inflation targets. Some observers wonder whether inflation targets, or any other price-level objectives, are practical for a central bank in an era when technological innovations threaten to undermine traditional elements of monetary control. Others do not question the ability of the central bank to control inflation, but would prefer that inflation targets were set at some other level or expressed over a different timeframe — perhaps long enough that they resemble targets for the price level itself.

In a second category are disputes over the desirability of some alternative regime, in which the external value of the currency would be the policy goal. Key subjects of disagreement here are the nature and direction of the links between exchange rate behaviour and domestic productivity performance, and the extent to which the prices of Canada's commodity exports do, and should be allowed to, affect the exchange rate. The critical questions here bear on how the Canadian economy would adjust to economic swings and commodity price movements if the Canadian dollar were not free to float.

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[9] See Courchene and Harris (1999) and Grubel (1999), whose contributions launched a debate on the topic of a North American Monetary Union. Both papers canvassed the idea that Canada's floating exchange rate regime hampered domestic productivity.

Finally, the political processes that underlie monetary policy are at issue. Are inflation targets set in terms of the CPI's annual rate of change a reasonable compromise between an indicator for monetary policy that citizens can readily interpret and one that economists and central bankers would see as a sensible way to monitor the effects of central bank actions? Does the assertion that Canada requires a flexible exchange rate to maintain political control of its own monetary policy reflect an outmoded desire to maintain national sovereignty in an increasingly globalized economy? Or does it simply respect the principle that those who make policy should be accountable to those on whose behalf they act?

Outline of the Rest of the Book

In this brief history, we hope we have demonstrated, not just that monetary policy matters, but that Canadian monetary policy evolved over the past decade in ways that affect Canadians in their day-to-day lives. In the pages that follow, we take a closer look at the role of the Bank of Canada in the economy, the changes in both the goals and tactics of Canadian monetary policy since the early 1990s, and the outstanding controversies that Canadians will likely address in the years to come.

Part II of this book begins, in Chapter 2, with a discussion of central banking in general, and its development in Canada in particular. Chapter 3 then looks at the economics of monetary policy: what it can and cannot do, and how changes in the stance of the central bank work their way through the economy. Chapter 4 discusses some key political economy questions: how monetary policy interacts with fiscal policy, and the nature of democratic control over the central bank.

Part III then takes a detailed look at the experience of the past decade. Chapter 5 describes the conduct of monetary policy in the context of key developments in the international and domestic economies. Chapter 6 details the framework for monetary policy in Canada as well as the major changes in the Bank of Canada's operating procedures that have been implemented since the early 1990s.

Part IV draws some conclusions from recent Canadian experience and then looks ahead. Chapter 7 summarizes the lessons from Canada's experience with low inflation, and documents the uncertainties surrounding the behaviour of the exchange rate and its impact on the economy. Chapter 8 elaborates the arguments for and against alternatives to current monetary policy arrangements, canvassing such radical options as the disappearance of the Canadian dollar as an independent currency, and less dramatic adjustments to the inflation-targeting regime itself. Chapter 9 brings the study to an end with a brief discussion of the some general lessons of recent experience and some speculation about directions for Canada's monetary arrangements in the years ahead.

PART II

Central Banking and the Canadian Economy

2 The Bank of Canada and Canada's Monetary System

The detailed history of Canadian monetary policy since 1990 is, in large part, a story of the gradual adoption of goals and tactics that are more consistent with the powers and limits of monetary policy than was the case in the 1970s and 1980s. As vital background to how that change came about and why it is important, this chapter provides a description "from the ground up" of the role of money in the Canadian economy and the Bank of Canada's place in the monetary system.

Money, Central Banking, and the Economy

The familiar phrase "market economy" describes a set of arrangements by which individuals effect their decisions about producing, distributing, and consuming goods and services by voluntarily exchanging property rights. Money is an extraordinarily powerful tool for facilitating such exchanges, and has several functions.

In a market economy, prices of goods and services are set in terms of money — money is thus the economy's *unit of account* for current transactions. The terms of a contract to exchange goods and services in the future, or to grant credit and discharge debts, are set through the medium of money — thus, money is also the economy's *standard of deferred payment*. Current transactions in goods and services are sometimes consummated by the immediate exchange of money and sometimes by granting credit that an exchange of money will discharge in the future — thus, money is also the economy's *means of payment*. And finally, since whatever serves the means- of-payment function must have a degree of durability, money can serve as a way of holding wealth, too — in other words, money is also a *store of value*.

In a typical modern economy, what functions as a unit of account, a standard of deferred payment, and a means of payment is the product of custom codified by law. In the past, money usually consisted of coins minted from precious metals that had value as commodities in alternative uses. Nowadays, money consists mostly of paper and electronic representations of debt, usually obligations of national governments and/or their central banks in the case of currency, and the debt of banks in the case of deposit liabilities transferable by cheque or other means.[1]

Why Governments Care about Money

Money's pervasive use in all the roles noted above makes the monetary system critical to any society in which markets coordinate economic activity. Because the monetary system facilitates communication among people and enables them to contract with one another, it has similarities to a legal system or even a language. Although the case for government oversight and regulation of monetary systems is a matter of academic controversy, nearly all advanced economies accord the public sector several key roles in their monetary systems,[2] falling into three overlapping categories. First, governments provide the infrastructure of property and contract law in which markets operate. Second, they regulate the probity and solvency of banks and other financial institutions, and may promise or act to shore up the banking system should events threaten to undermine confidence in it. Third, governments engage in monetary policy, operating through the banking system to promote particular objectives for the economy as a whole.

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[1] In this book, we frequently use "banks," "banking system," and related terms to refer not only to chartered banks, but also to institutions and groups of institutions that operate under such names as trust companies and credit unions. The key feature of all such institutions is their ability to take and transfer deposits, a feature that historically has been associated with banking.

The division of these tasks among the many agencies of government varies from country to country. In Canada, as in most jurisdictions, defining, maintaining, and enforcing property rights are matters for legislatures and the courts, while supervising banks and other financial institutions is the task of specialized agencies, the most important of which are the federal Office of the Superintendent of Financial Institutions (OSFI), the Canada Deposit Insurance Corporation (CDIC), and their smaller provincial counterparts.[3] The primary functions of these two types of agencies differ, as the names of the federal organizations indicate. The former is mainly concerned with overseeing the solvency of financial institutions and the probity of their operations, while the latter insures holders of Canadian-dollar-denominated deposits (up to a maximum, currently $60,000) against losses should they fail. In practice, however, their activities overlap, and they work closely with one another.

A major motive behind the development of modern central banks was to provide a backstop for the banking system. In this capacity, the central bank is usually referred to as *lender of last*

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[2] The alternative is so-called free banking — a monetary system governed solely by the workings of competitive markets. A lively academic literature on the virtues of such a system was set in motion by Hayek (1976); see Selgin and White (1994) for a still highly relevant survey. The ideas in this literature, however, have had little influence on policy in Canada or elsewhere, so we do not pursue them in this study.

[3] Canada accords its central bank no formal supervisory role, in which its practice differs sharply from that of the United States, where agencies such as the Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation share supervisory duties with the Federal Reserve System.

resort.[4] Since users of money have difficulty determining the creditworthiness of organizations that issue it, according private banks unlimited and unregulated power to issue money tends to be unattractive. There are times, however, when the ability of a highly visible central institution to issue money in potentially unlimited amounts can be critical to sustaining faith in the banking system. In Canada, the Bank of Canada is such an institution. It can, should circumstances warrant, provide unlimited liquidity to the banking system to prevent a crisis of confidence in one or more institutions from leading to a systemic collapse.

Monetary Policy

The central bank's ability to create money at will also lies at the heart of the conduct of monetary policy. Any monetary system ultimately rests on a means of payment whose acceptability is, for all practical purposes, beyond question. Historically, precious metals and coins manufactured from them played this role.[5] Now, such "high-powered" money is provided by the liabilities of central banks.

Changes in the stock of high-powered money affect the willingness of commercial banks and similar institutions to extend credit, which, in turn, influences the stock of other forms of money — and, by that route, spending, output, and prices in the economy. Because people dislike exposing commerce and living standards to gratuitous fluctuations in the supply of whatever serves as high-powered money, such as gold in the days of the gold standard, governments have tended to give central banks decisive control over its creation and/or issue.

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[4] Discussions of the lender-of-last-resort function go back to the very beginning of the nineteenth century; seminal works include Henry Thornton ([1802] 1962) and Walter Bagehot ([1873] 1962). Among recent commentaries on this literature and its contemporary relevance are Humphrey (1989) and Laidler (2002).

[5] As we discuss below, the historic connections between a government's fiscal operations and its monetary policy, as well as the interest of finance ministries and central banks in financial stability, tend to be reflected in a role for central banks in the management of national government debt.

In Canada, the Bank of Canada exercises such control through the role it plays in the systems commercial banks and other institutions use to clear and settle payments among themselves — in effect, the Bank sets the terms at which commercial banks and other institutions can borrow funds from, or lend funds to, itself. This power, and in particular its ability to set the interest rate at which such transactions take place, gives the Bank decisive control over some key financial market variables — notably, very short-term interest rates. It also gives the Bank an important influence over other market variables, such as longer-term interest rates and the foreign exchange rate, thus enabling it to promote faster or slower rates of lending and money creation in the Canadian economy. The Bank therefore also exerts a powerful influence on the pace of spending and, ultimately, on the price level.

The power to conduct monetary policy matters because, among other things, there is no compelling reason to believe that market economies are always and inherently stable if left to their own devices. Shocks from sources as diverse as the weather, changes in technology, or variations in consumer tastes can impinge on the monetary sector — for example, by causing changes in private agents' demands for bank loans; in turn, reactions within the monetary sector can amplify the effects of the original shocks on the economy as a whole. As observers of bubbles and collapses know well, disturbances can also originate within the financial system itself, with similar effects. The end product in all of these cases can include, in addition to effects on the price level and its rate of change, variations in the economy's level of output and the volume of employment it generates. Sufficiently large and unpredictable fluctuations in prices, sales, output, and employment can undermine the reliability of money as both a standard of deferred payment and a store of value, and hence the very mechanisms whereby goods and services are exchanged. Many governments also see the external value of the currency as a matter of special interest, and would include shocks originating abroad that affect it in a list of events to which monetary policy should respond.

The once-dominant view of monetary policy — which evolved slowly and piecemeal in the century and a half before World War Two — was that it should attempt to offset all of these effects. Policy debates were typically about how best to attain these multiple goals and, crucially, about how much success such an ambitious program might yield. As these debates evolved, rather pessimistic conclusions emerged about what could be expected from monetary measures in practice, as opposed to principle. These conclusions, in turn, led many countries to adopt the more modest goals for monetary policy that are now in place.

The Bank of Canada

Canada's central bank was founded in 1934. Initially partly privately owned, the Bank of Canada came under full public ownership as a Crown corporation in 1938. The Bank's creation may reasonably be seen as a reaction to the Great Depression and the accompanying breakdown of the international gold standard, a consequence that was widely expected to be temporary at the time, but turned out to be permanent. Before 1914, the gold standard kept the Canadian monetary system on a reasonably efficient "automatic pilot." World War One interrupted its operations, however, and the federal Department of Finance assumed limited monetary policy functions, which it continued to exercise throughout the 1920s, until the onset of the Great Contraction of 1929–33 convinced many of the need for a different body, not connected with or constrained by the conduct of fiscal policy, to play this role.[6]

The Bank of Canada's Mandate

The mandate of the new Bank of Canada, as set out in the preamble to the act of Parliament that created it, was to:

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[6] Powell (1999) succinctly describes these developments in his extremely readable *History of the Canadian Dollar*.

> regulate credit and currency in the best interests of the economic life of the nation, to control and protect the external value of the national monetary unit and to mitigate by its influence fluctuations in the general level of production, prices and employment, so far as may be possible within the scope of monetary action, and generally to promote the economic and financial welfare of the Dominion.

This mandate — which, with "the Dominion" now replaced by "Canada," is still in place — reflects the conventional economic thinking of the era of its drafting. In 1934, restoration of the gold standard was widely expected, so that maintaining the "external value of the national monetary unit" got pride of place. Moreover, at that time, although advocacy of fiscal policy as a tool of economic management was common enough among academics, monetary policy was nevertheless regarded as the principal countercyclical device, which explains the ambitious list of supplementary tasks given to the Bank.

Because this mandate is in the preamble to the *Bank of Canada Act*, it is not a set of legally binding instructions. It is, rather, a guide to interpreting how the Bank should use the powers the body of the act confers on it. That is perhaps why, although the international monetary system has evolved almost beyond recognition since the 1930s, although economic thinking has changed radically too, and although the body of the *Bank of Canada Act* itself has been amended from time to time, Canadian monetary policy has always been able to adapt to circumstances as those responsible for its conduct have thought best, without requiring any amendments to the mandate.

The Bank as the Federal Government's Agent

The Bank of Canada acts as the agent of the federal government in the issuance, administration, and retirement of federal debt, and acts when instructed by the government in the foreign exchange market. Since debt management and foreign exchange dealings can interact with measures needed to conduct monetary policy, the Bank's subsidiary status in these matters means that, in principle, the federal government could influence monetary policy, potentially decisively, through its instructions to the Bank.

In one sense, the federal government's potential influence on monetary policy is muted. Nothing in the *Bank of Canada Act* explicitly requires the Bank to buy and sell government securities at the government's command. Accordingly, the Bank's ability to use transactions affecting other parts of its balance sheet to offset purchases and sales of specific government securities that might otherwise affect the amount of high-powered money in the banking system limits its vulnerability to political influence by this route.

Political leverage is, however, greater in matters related to foreign exchange transactions. Although negotiations about the creation of institutions requiring international monetary coordination would likely involve advice from the Bank of Canada, the federal government — like the governments of the United States and the members of the European Monetary Union — has clear primacy in such matters. And the federal government could use its authority over foreign exchange transactions to affect monetary policy to the point of inducing a radical change in Canada's monetary policy regime. It could, for example, by administrative decree, change Canada's exchange rate arrangements from flexible to fixed — forcing the Bank of Canada to emit as much, and only as much, high-powered money as is consistent with maintaining the dollar's external value.

The Bank's Powers

The Bank of Canada's most important power is the ability to create its own liabilities, in the form of bank notes and deposits denominated in Canadian dollars. The Bank typically exercises its monopoly over the issuing of bank notes by responding to changes in the public's demand for currency. It does not actively try to control the quantity of bank notes in circulation. By contrast, the Bank's deposits of Canadian dollars are a very special type of asset. Only certain institutions — notably the federal government, and private-sector financial institutions that participate directly in the clearing and settlement system — may hold them, and the Bank's management of these deposits is crucial to its influence over the banking system and its ability to conduct monetary policy.

The principal use of these deposits is to settle inter-institution imbalances that arise from the flows of payments among their customers — individuals, businesses, other governments, and financial institutions that process payments through institutions with accounts at the Bank — as they conduct their daily business. The Bank's control over the terms on which members of the clearing and settlement system may borrow from and lend to each other — in particular, its control over the interest rate at which overnight loans take place — enables it to influence conditions in the credit markets in which those institutions deal with their business and household customers, and also the amount of liabilities, in the form of deposits at financial institutions, their lending activities create.

Currency plus settlement balances together constitute Canada's stock of high-powered money (sometimes referred to as the "monetary base"), while that fraction of currency in the hands of the non-bank public plus the deposit liabilities of the banks make up the economy's money stock.[7] Because modern commercial banks issue a variety of deposits and there is a certain arbitrariness about whether or not any of one of those deposits is "money," there is no single unambiguous measure of the stock of money. *Narrow* monetary aggregates are defined to include a limited range of deposits — typically those that are directly chequable and hence immediately usable as means of payment — while *broad* aggregates also encompass savings accounts and term deposits of various kinds that are not immediately available for such purposes, but that do serve as stores of value.[8]

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[7] Currency consists of coins as well as bank notes. Coins are produced by the Royal Canadian Mint. Since the volume of coins in circulation is determined by public demand, they are not susceptible of direct influence by monetary policy.

[8] We discuss Canada's monetary aggregates in more detail in Chapter 3.

The Bank of Canada is also empowered to deal in certain securities, notably government debt,[9] which complements its ability to create high-powered money, since its purchases and sales of debt can change the volume of base money. These so-called *open-market* operations in securities were historically the principal tool of monetary policy, and still are in some jurisdictions today.[10] In contemporary Canada, however, the Bank has most of the power it needs to conduct monetary policy operations in normal circumstances through its ability to set the terms on which it takes overnight deposits of base money from, and grants overnight overdrafts of base money to, institutions that participate in the clearing and settlement system.

Lender of Last Resort

The Bank of Canada's powers to conduct open-market operations and to lend to financial institutions are crucial in enabling it to act as lender of last resort to the banking system in times of crisis.

The need for a lender of last resort arises from the possibility that, in times of economic uncertainty, the public might wish to increase its holdings of cash relative to bank deposits. Indeed, the public might even lose confidence in the soundness of one or more banks and wish to make sudden and large withdrawals of cash that those banks are unable to grant. The usual initial response of a central bank to such tendencies should be to provide liquidity to the market as a whole, perhaps through open-market operations, but if such intervention still leaves specific institutions in danger of failure, it may follow up with direct loans to them. The conventional wisdom of lender-of-last-resort operations has it that, in such circumstances, insolvent institutions should be allowed to fail, but that those that are merely illiquid and cannot meet demands for withdrawals simply because they cannot sell assets fast enough to raise the cash should be supported. The rationale for helping such institutions is that their owners and depositors would otherwise suffer undeserved losses and, critically, that their closure could spark fears among depositors of other sound institutions that might cause a chain reaction.

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[9] Although the Bank has the power to deal in provincial government debt, it has restricted its dealings to federal debt.

[10] Aside from short-term agreements to purchase and resell or to sell and repurchase securities, which central banks use to reinforce the influence of their short-term lending practices on interest rates (a practice we discuss further in Chapter 6), open-market operations are mainly of interest today for their potential use when normal techniques of monetary control are inadequate — for example, to provide further monetary stimulus to an economy in which short-term interest rates are already so close to zero that it is impractical to try to lower them further.

The lender-of-last-resort function thus involves both providing liquidity to the market and making emergency loans to solvent but illiquid institutions, and being seen to be doing both, when such problems threaten. The limited use of this function in recent Canadian experience does not mean it is becoming unnecessary and obsolete — rather, the very knowledge that such facilities are available if needed can prevent a run on a bank developing in the first place. More generally, its availability promotes stability in the financial system.[11]

There is nothing mandatory about the use of the lender-of-last-resort function. Loans to specific institutions are at the Bank of Canada's discretion, as is the judgment of what constitutes good collateral for such loans. As with lenders of last resort in other countries, the guidelines governing the Bank's exercise of this function, though clear in principle, tend to be opaque in practice. This opacity reflects, in part, the often indistinct line between illiquidity and insolvency, since judgments about solvency can hinge on the valuation of the assets a distressed institution owns, and their market price will itself reflect changing judgments about the prospects of systemic trouble. The opacity of lender-of-last-resort guidelines also reflects central banks' need to minimize so-called moral hazard problems, where financial institutions, confident of a bailout, are tempted to be less careful than they would otherwise be.

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[11] Nineteenth and early twentieth century monetary history in Britain and the United States is replete with banking panics, driven by contagious fear among the public, when sound institutions failed for lack of immediate liquidity. The great waves of bank failures in the U.S. between 1929 and 1933 provide an especially vivid example of how damaging such panics can be. More recent experience in Asia and Argentina also shows what can happen when effective lender-of-last-resort facilities are not readily available.

The debacle of the Long-Term Capital Management (LTCM) "hedge fund" provides a good recent illustration of the problems that make the lender-of-last-resort function important. LTCM ran into serious trouble when the Russian financial crisis of August 1998 triggered a "flight to quality" that widened the spreads between yields on virtually all securities and those on U.S. treasury bonds, undermining the value of LTCM's portfolio in a way its managers had not anticipated. LTCM's creditors, which included many sophisticated financial institutions, had made substantial short-term loans to it. For each of these institutions individually, it made sense to get those funds back as quickly as possible. From the point of view of the stability of the banking system as a whole, however, it was preferable to renew the loans, since the alternative was a disorderly collapse. The U.S. Federal Reserve's response was not simply to provide liquidity to the market and stand ready to guarantee loans to solvent institutions should a crisis develop, but to organize an agreement among the fund's creditors to continue lending to it, pending an orderly resolution of its difficulties. By this means, the Fed prevented the crisis developing to the point at which loans to specific institutions were needed.

This episode, and the Fed's role in it, was not unique.[12] That is why — in addition to their monetary policymaking function — central banks also have a role in maintaining *macrofinancial* stability. Among the powers they possess to fulfill that role are those that enable them to act as lender of last resort.

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[12] Indeed, the Fed's handling of this event bears a striking resemblance to the way the Bank of England dealt with the Baring Crisis of 1890. In this case, too, the central bank organized support from other private sector institutions for one that was in difficulties, thus staving off a financial panic and, indeed, ensuring the ultimate survival of the distressed institution. On the 1890 episode, see Presnell (1968).

Regulation, Supervision, and Macrofinancial Stability

To broaden the characterization of the role of a central bank in this way fits the U.S. Federal Reserve somewhat better than it does the Bank of Canada. Financial system stability depends in large part on the business practices of financial institutions. According central banks a role in supporting that stability raises the question of whether they ought not also to play a regulatory and supervisory role. Many central banks, including the Fed, do formally play such a role. The Bank of Canada's formal obligations in that respect, however, are limited to its day-to-day transactions in, and its supervision of, the clearing and settlement system. The major regulatory and supervisory functions are exercised by separate institutions — namely, OSFI and the deposit-insurance bodies, the pre-eminent example of which is the CDIC.[13] Separating supervisory and lender-of-last-resort functions, it is argued, helps avoid the conflict that would arise if, for example, a bank that was pronounced solvent by the central bank in its role as regulator sought support from the central bank in its role as lender of last resort. Such a central bank might find it harder to judge the institution insolvent and hence unworthy of assistance than would one with no oversight role.

It is hard to know how much to make of this point. The Bank of Canada often works closely with OSFI, and its governor sits on the CDIC's board of directors. It would, therefore, be hard for the Bank to ignore assurances from OSFI or the CDIC that an institution in trouble deserved help. Indeed, as Carr, Mathewson, and Quigley (1994) recount, when the Northland and Canadian Commercial Banks got into difficulties in 1985 and ultimately failed, the Bank of

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[13] Deposits at all Quebec-based institutions were insured by the Régie de l'assurance-dépôts du Québec until 2002. In that year, the Quebec agency was merged into the province's Autorité des marchés financiers, which also exercises regulatory and supervisory powers over other financial institutions. Other provinces have special agencies insuring deposits at credit unions.

Canada made substantial advances to what turned out to be insolvent institutions. Furthermore, the fears for the solvency of small western Canadian institutions that these events provoked led to a run on the Vancouver-based Bank of British Columbia that was stopped only by its takeover by the Hong Kong and Shanghai Bank of Canada — even though, when the dust had settled, the bank turned out to have been solvent.

As to government-mandated deposit insurance, in the United States this was a product of the financial calamities of the 1930s. The Federal Reserve System, set up in 1913 in part to provide lender-of-last-resort services to the highly fragmented U.S. banking system, failed in this role the first time these services were really needed, in 1929 (see Friedman and Schwartz 1963; Meltzer 2003). Widespread bank failures followed, largely driven by runs of depositors, in a series of panics that culminated in the Bank Holiday of 1933. The Federal Deposit Insurance program, put in place that year, guaranteed small deposits to provide the reassurance needed to prevent any repetition of this catastrophic episode.

Canada's banking system, by contrast, was already highly concentrated in the 1930s, and the Depression saw no bank failures here. Canada was, therefore, slow to follow the U.S. example in providing national deposit insurance. Indeed, Canada's large chartered banks opposed deposit insurance, arguing that it would create moral hazard and subsidize their smaller competitors. The rapid growth of small trust companies and similar institutions in the 1960s, however, led to the establishment of the CDIC in 1967.[14] Nowadays, individual deposits at institutions such as nationally chartered banks and trust companies are insured up to a maximum of $60,000, and institutions whose liabilities are insured pay premiums. Since the CDIC is liable for losses that arise from insured institutions, it has power to inspect and supervise their activities, which it exercises alongside OSFI. If necessary, the CDIC can close down or arrange the takeover of any institution it deems insolvent, prior to realizing its remaining assets. The federal government provides a backstop for the CDIC's liabilities, should the need for prompt payment to depositors ever threaten to exhaust its ready funds — an arrangement that arguably gives the CDIC indirect access to the Bank of Canada's lender-of-last-resort powers.

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[14] According to Carr, Mathewson, and Quigley (1994), the establishment of deposit insurance in Canada did indeed produce the moral hazard critics had predicted. They argue that excessive risk taking by small Canadian trust companies in the 1970s and 1980s led to a significant number of failures, albeit not on the scale of the (more generously insured) U.S. thrift institutions during the same period.

Complexities and Tradeoffs in Supporting Financial Stability

Who should supervise banks, and how, and the extent to which their creditors should look after themselves rather than being protected by the state are contentious questions.

The critical tradeoffs are between, on the one hand, having a banking system that is flexible and enterprising enough to allocate capital efficiently among competing potential uses and, on the other hand, maintaining a system whose liabilities are trustworthy enough to act as means of exchange and stores of value for all participants in the country's economic life, regardless of financial sophistication. The former goal seems to point toward light regulation and permitting badly run institutions to fail. The latter argues for regulations that prevent dangerous mistakes but that also inevitably inhibit innovation.

Whether Canada has struck a judicious balance in this area is open to debate, and in any event is beyond the scope of this study. For the purpose at hand, what matters is that Canada's approach to these issues in recent years has succeeded to the extent that concerns about macrofinancial stability scarcely affected monetary policy in the 1990s. As we discuss further in Chapter 8, various proposals for a radical overhaul of Canada's monetary order — forming a North American Monetary Union, say, or adopting of the U.S. dollar as Canada's currency — have potentially important implications for the means available to promote macrofinancial stability.

3 The Economics of Monetary Policy

As the Bank of Canada's mandate demonstrates, the early 1930s were a time of optimism about the power of monetary policy to improve economic life. Much has changed since then. In the intervening years, mainstream monetary economics has undergone at least four "revolutions" and/or "counterrevolutions" — Keynesian, monetarist, new-classical, and new-Keynesian — each of which left its mark on thinking about monetary policy.

What Monetary Policy Can and Cannot Do

Along with the evolution of economic thought since the 1930s went major changes in ideas about just what monetary policy can and cannot be expected to accomplish. Not surprisingly, many of the key questions are still topics of lively debate.

Real and Nominal Variables

To come to grips with the issues involved, it helps to distinguish two types of macroeconomic variables. *Real* variables include the volume of goods bought and produced in the economy, the rates of growth of these aggregates, the level of employment, and the price of one type of good or service relative to another. *Nominal* variables include the general price level and its rate of change, the foreign exchange value of the Canadian dollar, and the value of spending and output measured in current dollars.

As we explain further shortly, monetary policy in the first instance influences the current-dollar value of spending in the economy, or *nominal aggregate demand*. This demand must be satisfied either by *nominal aggregate supply* — real domestic output times the current price level — and/or, in an open economy, by net imports from abroad.

Setting aside complications arising from an open economy's transactions with the rest of the world (which we deal with later in this chapter when we discuss the exchange rate), a basic question about any change in monetary policy concerns the division of its impact on nominal aggregate supply between effects on real output on the one hand, and effects on the price level on the other. The answer depends on how responsive real and nominal variables are to changes in demand.

Suppose, at one extreme, that the volume of output is absolutely fixed, while prices of what is produced are completely flexible. In that case, monetary policy will influence only the price level — expansionary policy will drive it up and contractionary policy will drive it down, relative to any pre-existing trend. Suppose, at the other extreme, that the volume of output is completely flexible, while prices of what is produced are fixed. In that case, monetary policy will influence only real variables — under expansionary measures, real output (and likely employment as well) will be higher than it would otherwise have been, and under contractionary measures, it will be lower. In less extreme, but much more realistic, intermediate situations, the relative responsiveness of real and nominal variables will depend on the state of the economy, the period of time over which policy effects are being analyzed, and perhaps whether the policy is expansionary or contractionary.

Most economists agree that the higher the initial level of output and the longer the time considered, the less expansionary monetary policy affects real output and the more it affects prices. Over

Box 1: *Measuring Canada's Money Stock*

Measuring the stock of money requires judgments about what to include. Bank notes in the hands of the public are highly liquid instruments that fit any reasonable definition of money, as are chequing accounts. Some less liquid instruments, such as saving accounts involving formal notice periods before withdrawal, are also pertinent for many purposes, and items such as Canada Savings Bonds (CSBs) and money market mutual funds that individuals use for similar purposes may also be prove useful in monitoring the state of the economy. On a spectrum with the most liquid transactions-oriented items at one end and more inclusive aggregates containing many saving instruments at the other, the Bank of Canada publishes figures on several aggregates, most notably:

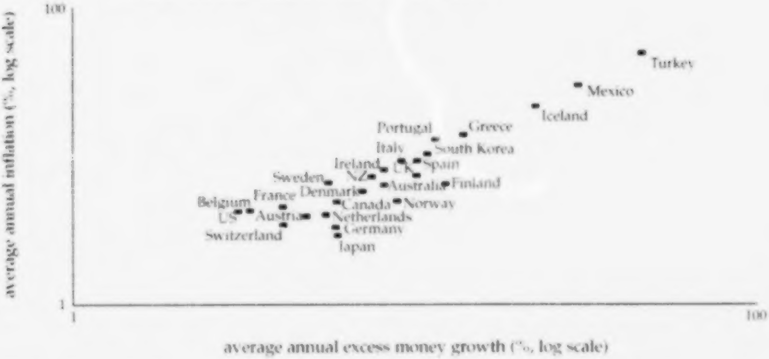
- Currency — bank notes and coins — in the hands of the public (that is, outside banks and the Bank of Canada);
- M1: currency outside banks plus personal chequing accounts and current accounts at banks;[a]
- M2: M1 plus personal savings accounts and other chequing accounts, term deposits, and nonpersonal notice deposits;
- M2+: M2 plus all deposits at non-bank deposit-taking institutions, money market mutual funds, and individual annuities at life insurance companies;
- M2++: M2+ plus all types of mutual funds and CSBs.

[a] The Bank publishes figures for both net M1 (which adjusts for items such as uncleared cheques and bank drafts) and gross M1 (which contains no such adjustment).

long periods, the link between money growth in excess of real output growth on the one hand, and inflation on the other, is prominent in data from many countries, as Figure 12 illustrates. In Canada, the relationship between excess money growth and inflation is readily visible over periods of around four years, as Figure 13 shows. (For an explanation of several measures of Canada's money stock, see Box 1.)

Most economists also agree that, regardless of starting conditions, the immediate effects of contractionary policy fall predominantly on real variables but that these dissipate over time as prices adjust.

Figure 12: ***Excess Money Growth and Inflation in 25 OECD Countries, 1970–2002***



Note: Excess money growth is growth of narrow money (IMF definitions) in excess of growth of real GDP. Money growth in countries using the euro is calculated on the basis of national money figures until the year of adoption of the euro, and money growth in the Euro area thereafter. Both axes use logarithmic scales to avoid illegible bunching of the low-inflation countries in the bottom left corner.

Sources: International Monetary Fund, *International Financial Statistics*; Organisation for Economic Co-operation and Development (OECD); Reserve Bank of Australia; Bank of Canada; authors' calculations.

Thus, after a monetary disturbance, most economists expect important short-term consequences for output and employment that persist long enough to matter. Figure 14 shifts from the multiyear focus of Figure 13 to a quarterly frequency, and shows how changes in the growth rate of narrow money (M1) tend to precede changes in the growth of output, which, in turn, tend to precede changes in inflation.[1] In the early 1930s, as the wording of the Bank of Canada's

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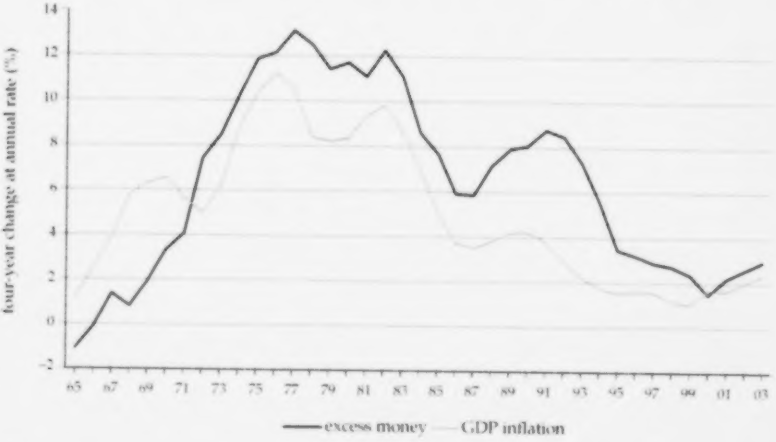
[1] Movements in the broader monetary aggregates, including M2++, tend to be contemporaneous with nominal gross domestic product. The tendency of movements in the more narrow and liquidity-oriented Net M1 to precede movements in other aggregates and in spending has been extensively documented in work at the Bank of Canada — see, particularly, Adam and Hendry (2000); Aubry and Nott (2000); and Robson (2000b). See also Laidler and Robson (1995); and Boessenkool, Laidler, and Robson (1996). A multiyear perspective on the lead between M1 and inflation (as Figure 13 provides for M2++) is complicated by the shifts in M1 demand in the 1990s, which we discuss later in this chapter and in Chapter 6.

Figure 13: ***Excess Money Growth and Inflation, Canada, 1965–2003***



Note: M2++ is the measure of money, with growth prior to 1968 extrapolated from M1 growth.

Sources: Bank of Canada; Statistics Canada, CANSIM database, tables 176-0025 and 380-0002; authors' calculations.

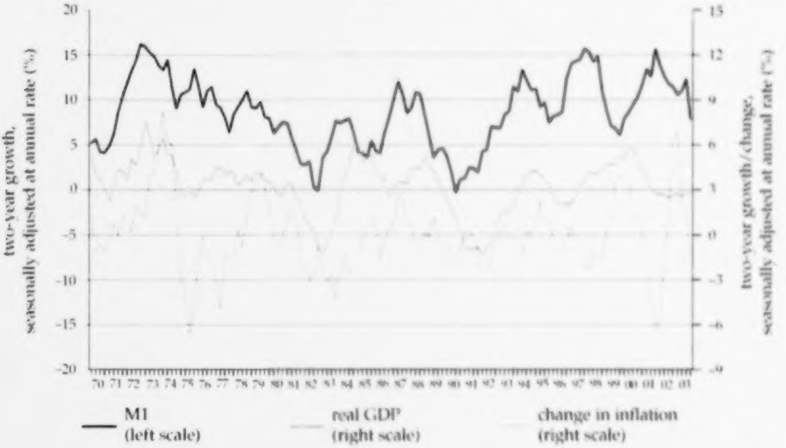
mandate shows, it was widely believed that these short-term powers of monetary policy could be used to help iron out cyclical fluctuations in, among other things, output and employment.

Time Lags and Uncertain Information

Nowadays, economists are conscious of how hard it is to implement countercyclical monetary policy. Serious problems arise from the difficulty of getting accurate and timely information about the economy's current and likely future performance and from the fact that the effects of monetary policy are subject to important time lags, the significance of which economists began to appreciate only in the 1950s.

It is uncontroversial that expansionary monetary policy can raise output in an economy operating below its productive capacity. The gap between actual and potential output that current policy can

Figure 14: ***Money, Output, and Changes in Inflation, Canada, 1970–2003***



Note: Growth of M1 and GDP are 8-quarter changes at annual rates; change in inflation is the one-year change in the year-over-year growth rate of the GDP price index. All observations are effectively centred one year earlier than they appear.

Sources: Bank of Canada; Statistics Canada, CANSIM database, tables 176-0025 and 380-0002; authors' calculations.

close, however, is not the one that exists today. Rather, it is the gap that will exist an uncertain number of months ahead when current policy will have its impact. In Canada, policy changes appear to have their peak effects on output some six to twelve months in the future; in the meantime, other factors will influence the economy's performance. Thus, even timely and accurate data on the current state of the economy, perfect knowledge about how current aggregate demand compares to aggregate supply, and accurate estimates of how much monetary stimulus will close any gap — each of which is an unrealistic requirement in its own right — will not necessarily permit the plotting of a successful monetary course.

Worse, errors can do more than just reduce the effectiveness of countercyclical policy. When the effects of policy come through, they might actually make matters worse than would have been the case in the absence of any initiative. An expansionary policy implemented when the economy is sluggish, for example, might have its main impact when other shocks have already cured that sluggishness, causing the economy to overheat; similarly, the delayed impact of a contraction could exacerbate an unforeseen slump. A large body of research on the theory and practice of stabilization policy suggests that the risks are real and serious of its actually being *destabilizing*.[2] Moreover, of course, data on the current state of the economy are less than perfectly timely and accurate. Researchers sometimes assume that economic information available well after the fact is the same as that which policymakers had at the time. The reality of policymaking is that much information that would be useful is either not available or measured incorrectly when policymakers must act.

It is for these reasons that few economists now advocate dedicating monetary policy efforts actively to stabilize — to *fine tune*, to use the phrase popular in a more optimistic era — real economic variables such as output and employment.

Full Employment and the Stable Inflation Level of Output

Thus, two interdependent possibilities for monetary policy seem to be ruled out here: aiming it at real economic variables, and casting it in a fine-tuning role when it is so aimed. To separate these issues requires discussion of the hypothesis that, in the wake of disturbances, the real economy always tends to fall backward to a particular equilibrium level of "full" capacity use and that, in such an equilibrium, the labour market will also generate what was once often termed "full" employment.

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[2] Friedman (1953) and Phillips (1954) did pioneering work on the role of time lags in creating difficulties for stabilization policy and, in particular, on the possibility that such measures could actually turn out to be destabilizing. For a recent investigation that highlights the difficulty of interpreting contemporary data, see Orphanides and van Norden (2003).

Nowadays, the measured unemployment rate associated with "full" employment is sometimes referred to as the *natural*, or *non-accelerating inflation, rate of unemployment*, although the first of these adjectives is extremely misleading. Whatever the terminology, however, the operational significance of these levels of output and employment is that they use just enough of the economy's productive capacity to create neither upward nor downward pressure on the inflation rate. Beyond that, there is no reason to believe that there is anything natural or otherwise ideal about them.

Many factors can influence the stable inflation levels of output and employment. They include the age and sex distribution of the population, its education levels and mix of skills, the extent to which these match the existing and emerging technologies available to actual and potential employers, the flexibility of employment contracts, the structure of income support programs, and the incentives such programs create for job seekers to accept whatever is offered to them rather than to keep searching for something better. Stable inflation levels of output and employment are also affected by the age and structure of the capital stock, the degree to which technological and other changes are rendering parts of it obsolete, and the ease with which existing capital can be converted to new purposes.

Clearly, there is no reason to believe that the stable inflation levels of output and employment are constant over time or that they grow at a constant rate; nevertheless, their existence constrains what monetary policy can accomplish. In particular, monetary policy cannot, except temporarily, drive actual output and employment above the stable inflation levels. If it tries, the likely result is upward pressure not just on prices, but also on the inflation rate — as individuals and firms come to anticipate that pressure and allow for its future effects on inflation in the bargains they make. If it were easy to estimate the stable inflation levels of output and employment, and if their levels and growth rates were constant over time, this danger could be avoided by setting and hitting a target for output that was equal to the stable inflation level. However, the information requirements of this seemingly straightforward task are overwhelming. As a result, policy aimed at fine tuning real variables risks not only being destabilizing, but also, if it is based on an overoptimistic estimate of the stable inflation level of output, setting in motion an ever-rising inflation. Small wonder, then, that many economists look with skepticism on any such measures.

Medium-Term Stability and Inflation Targeting

Since the late 1960s, arguments about the difficulties that time lags in monetary policy create and uncertainty about the stable inflation levels of output and employment have prompted "monetarist" economists such as Milton Friedman to advocate no more ambitious a goal for monetary policy than medium-term economic stability.[3] The specific measure that Friedman (1960) first advocated — namely, promoting a constant rate of growth in some chosen monetary aggregate — turned out to be impractical when versions of it were tried in the 1970s. Notably, but not uniquely, in the United States, where monetarism found much of its initial intellectual leadership, major and continuous institutional changes in the financial sector made the economic significance of various measures of money hard to judge. The general spirit of these recommendations, however, informs the current practice of aiming at a low and stable medium-term inflation target, and eschewing more ambitious goals.[4]

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[3] As is always the case with economic ideas, there are more contributors to this body of doctrine than usually receive credit for it. Particularly important in the development of monetarism are Karl Brunner and Allan Meltzer. Indeed, Brunner seems to have introduced the very term into North American debates. A valuable retrospective survey of their contributions is given in Brunner and Meltzer (1993).

[4] Two interrelated problems dogged this experiment, and not merely in the United States. First, to use the rate of money growth to bring down inflation turned out to be a great deal more complicated than to stabilize inflation that was already running at a very low rate, but Friedman's initial proposal had been made for the latter purpose. Second, the demand-for-money function turned out to be prone to shifts in the face of institutional changes, some of which were, in fact, the consequence of the high interest rates induced by lowering money growth in an inflationary environment. Freedman (1983) remains the definitive study of how these problems played out in Canada.

To restate the point more sharply and positively: in the current state of knowledge and over the medium term, monetary policy can reliably influence only nominal variables. Policy aimed at real income and employment will be sustainable only if its chosen targets happen to be the stable inflation levels of these variables. If policy is instead successfully geared directly to holding the inflation rate steady, the economy will in any case converge on these levels of output and employment, without the authorities' needing to rely on precise estimates of their values in formulating policy. Since the latter are far harder to estimate than the inflation rate, there is little to lose and much to gain by aiming monetary policy at the inflation rate and either letting output and employment look after themselves in the medium to long term or addressing problems with the behaviour of output and employment through policies that improve the workings of labour and capital markets.

One potentially important refinement of this conclusion arises from contractual rigidities in prices, especially wages. Against the background of stable inflation, wages in particular sectors must move relative to one another as the structure of demand in the economy changes, rising in areas that are expanding and falling in those that are contracting. The required changes are in relative *real* wages. In an inflationary economy, these changes can occur if some nominal wages simply rise faster than others, with those in lagging sectors perhaps rising more slowly than prices overall. The lower the overall inflation rate, however, the likelier such adjustments are to require actual cuts in nominal wages in some sectors. If workers have a special dislike of actual cuts in nominal wages, a dislike that goes beyond reluctance to accept wage growth that is lower than inflation, the market may reallocate labour less efficiently — and more painfully — at low inflation rates. In this case, the stable inflation levels of output and employment would be lower at lower inflation rates.[5]

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[5] This theoretical possibility was thoroughly aired by Tobin (1972) at a time when inflation in most countries was approaching double digits. It attracted renewed attention in the low-inflation environment of the 1990s, and disagreements about its empirical significance played an important part in...

This possibility aside, inflation targeting has other important implications for the behaviour of output and employment. Any shortfall of output from its stable inflation level will put downward pressure on the inflation rate; conversely, any excess of output from its stable inflation level will put upward pressure on the inflation rate. Thus, shocks to aggregate demand that depress the economy and open up what is generally called a *negative output gap* also tend to slow inflation down, while expansionary shocks that create a positive gap tend to speed it up. A policy that is successfully geared to keeping inflation steady will automatically work to counter these trends.[6] Things are not quite as straightforward as this simple conclusion might seem to imply, however, because rather a lot hinges on the qualifier "successfully."

A central bank intent on controlling inflation must implement measures that, in the first instance, affect the output gap. If the inflation rate is quite clearly off its target, the bank will not need a precise estimate of the economy's stable inflation level of output in order to decide what to do — a rough and ready idea of this level is enough to enable policy to create a negative or positive gap, as required, and get the inflation rate moving toward its desired level. Such a policy decision also requires a subsidiary choice about how quickly to bring inflation back to its target — the less precise is the available evidence on the size of the gap, the more slowly policy

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Note 5 - cont'd.

...Canadian debates about just how low an inflation rate the Bank of Canada should be aiming for, as we shall see later. See Akerlof, Dickens, and Perry (1996) and, in a specifically Canadian context, Fortin (1996, 1997).

[6] Fiscal policy has traditionally been considered an important stabilization tool as well. In a parliamentary system such as Canada's, fiscal policy looks attractive because changes are, in principle, quick to implement. There are, however, several difficulties with this view. Makers of fiscal policy have no easier a time discerning the true state of the economy than makers of monetary policy. Fiscal measures are, in practice, often implemented with significant lags. And the complex interaction of expectations about key consequences of fiscal changes, such as their implications for future tax levels, makes the impact of fiscal changes on spending and output much less certain than the descriptions in traditional textbook accounts.

should seek to close it. Once inflation is back on track, however, and given that the bank's task is to keep it there, more exact estimates of the stable inflation level of output will be needed for the bank to be able to gauge the sign, let alone the magnitude, of the output gap. As we have already seen, it is precisely because such information is not readily available that inflation targeting is considered to be more attractive than output targeting in the first place.

The implications of these uncertainties for inflation targeting are serious, and we return to them in Chapter 8. For now, our key point is that inflation targeting is not a complete retreat from policy activism, even as far as output stabilization is concerned. It is better thought of as the outcome of a division of labour among policy measures. Monetary policy is assigned a single, but, it is hoped, attainable medium-term nominal goal, which will have beneficial side effects in stabilizing real variables. Other policy instruments are assigned to other goals, including those for the longer-term behaviour of those same real variables.

How Monetary Policy Affects Aggregate Demand

We remarked earlier that monetary policy affects the economy by way of its influence on the nominal aggregate demand for goods and services. So far, we have been discussing the factors that govern the way these effects are divided between real output (and hence employment) on the one hand and the price level on the other, their implications for the choice of a goal for monetary policy, and the problems they might pose for a chosen goal for the inflation rate. It is now time to discuss the first set of links in the transmission of changes in monetary policy to aggregate demand.

The Role of Interest Rates

Although much commentary accords interest rates alone the critical role in transmitting central bank actions to the economy — with lower interest rates boosting aggregate demand and higher interest rates depressing it — this story is too simple. To begin with, much of this commentary neglects the crucial distinction between *nominal* interest rates and *real* interest rates — the nominal rate adjusted for actual or expected inflation. Both nominal and real interest rates, moreover, are influenced by the supply and demand for loans of all types and by terms in capital markets that these days are international in scope. Central banks in general, let alone the central bank of a single, rather small country such as Canada, are tiny players in these markets. Their ability to move the overall structure of interest rates of different maturities and on different instruments — especially real interest rates — is correspondingly limited, even when those instruments are denominated in their own currencies.

The interest rates over which individual central banks do have significant direct control are nominal rates on very short-term loans denominated in domestic currency. The exercise of this special direct influence has many consequences of economy-side significance, some of which affect other interest rates in a straightforward manner and others of which work through other channels.

To conduct monetary policy, any central bank needs a "fulcrum" on which it can operate — that is, control over the availability to the banking system of a uniquely liquid and acceptable means of settlement. As already noted, the Bank of Canada is the sole supplier of high-powered money in Canada — currency and the Bank's own deposit liabilities. The significance of deposits at the Bank lies in their unique utility to financial institutions when they settle with each other the imbalances that arise from their customers' activities. At the end of every business day, the flows of payments among firms and individuals who maintain accounts at various financial institutions leave some of the latter net creditors and others net debtors.[7]

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[7] Prior to 1999, the Automated Clearing and Settlement System was the key clearing system whose settlement balances provided the Bank of Canada with its principal fulcrum for implementing monetary policy through injections and withdrawals of funds. Since then, the Large Value Transfer System has become the predominant clearing system in Canada, and the deposits at the Bank that are used to settle outstanding net obligations within it now provide the Bank with its fulcrum.

An institution that finds itself a debtor must transfer funds on deposit with the Bank of Canada to a creditor. If it does not have such funds on hand, it must borrow them, either from some other institution that has emerged from the day's business as a creditor or from the Bank of Canada, which alone can grant an overdraft for just such a purpose. Similarly, a creditor institution will either lend out its surplus or leave it on deposit with the Bank of Canada. Such loans and overdrafts are granted until the beginning of the next business day, and hence are referred to as *overnight money*.

The rate of interest on overnight loans between banks is called the *overnight rate*; the interest rate the Bank of Canada charges on overdrafts is called the *Bank Rate*; and the Bank also pays interest on deposits held with it at its own *deposit rate*. These rates are, of course, always stated on a per annum basis. As we recount in Chapter 6, the details of the Bank's operating procedures evolved in the 1990s; since 1996, the Bank has set a 50 basis point (half a percentage point) "operating band" between its deposit rate and the Bank Rate, while continuously varying the supply of deposits to the overnight market in order to achieve a target for the overnight rate halfway between these two limits.

The Bank's chosen operating band is nowadays the decisive feature of the market for overnight funds. Because the Bank will lend at the Bank Rate, no financial institution able to borrow from it will borrow above that rate, and because the Bank will take deposits at an interest rate 50 basis points below the Bank Rate, no financial institution able to hold deposits at the Bank will lend at a rate below the deposit rate. The Bank can, if it sees fit, provide additional direction to the market through short-term agreements to purchase and resell securities when it wishes to inject liquidity and steer day-to-day interest rates lower, or sell and repurchase agreements when it wishes to withdraw liquidity and steer rates higher. These operations, however, are not essential to the conduct of policy.[8]

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[8] The interest rate in these transactions is the difference between the purchase and sale price of the securities concerned. The formal terms for these transactions...

The Credit Channel of Monetary Policy

The overnight rate is of strategic importance for the banking system. Individual banks make loans to their customers by writing up credit balances in the accounts of borrowers. Very few people borrow simply to add the proceeds of the loan to their bank account, so those balances tend shortly to be spent. When they are, they typically show up in the account of a depositor at another bank. The more aggressively an individual bank lends, therefore, the likelier it is to end up a net debtor and need to borrow in the overnight market or take an overdraft at the Bank of Canada when the time comes to settle each day's transactions. Hence, the Bank of Canada's control of the overnight rate enables it to influence each bank's, and therefore the whole banking system's, willingness to grant credit to its customers and the terms on which it does so. When the Bank of Canada lowers the overnight rate, the system becomes more willing to lend; when the Bank raises it, the system becomes less willing to lend.

These effects are the first stage in what is sometime called the *credit channel* of monetary policy's transmission mechanism.[9] To the extent that lowering (or raising) the overnight rate makes banks more (or less) willing to expand their loans, this has the effect of making it easier (or harder) for their customers to finance investment and consumption expenditure. Thus, by way of this credit channel, a lower overnight rate stimulates aggregate demand and a higher rate depresses it.

The financial institutions holding accounts at the Bank of Canada compete with all manner of other lenders, so their greater or lesser

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Note 8 - cont'd.

...in the Canadian context are *purchase and resale agreements* and *sale and repurchase agreements*; the more familiar money market terms are *repos* and *reverse repos*.

[9] Many theories of the credit channel emphasize the special character of financial intermediation — in particular, the intimate knowledge banks develop about their customers, which makes borrowing and investing by bank-dependent customers especially sensitive to monetary policy actions. See, for example, Bernanke and Blinder (1988).

eagerness to lend, and the resulting changes in the interest rates at which they will do so, also affects the terms offered by other lenders. These effects are not uniform across the board. The terms that banks offer on short-term loans are most directly affected by the cost of overnight money, so short-term interest rates are those that are most directly affected by monetary policy. Further along the maturity spectrum, interest rates become more heavily influenced by other forces.

Crucial among these forces is the pattern of bank customers' supply and demand for credit of varying maturities. Here, the effects of monetary policy may differ from those that an observer who focuses only on short-term borrowing costs might expect. Suppose, for example, that a currently lower overnight rate causes actual and potential borrowers and lenders of longer-term funds to anticipate a greater appetite for funds in the future as a strengthening economy boosts demand for consumer and business loans. Since borrowers and lenders expect short-term interest rates to rise in the future, easier monetary policy that lowers current short-term rates might actually cause longer-term rates to rise in both real and nominal terms; conversely, tighter policy might lower them.

Closely related to this force is the effect of changes over time in the expectations of borrowers and lenders about future inflation. If a current easing (or tightening) of policy looks likely to affect the economy sufficiently to induce a future increase (or decrease) in inflation, long-term nominal interest rates may again rise when short-term rates fall (and fall when short-term rates rise). Only if a current easing (or tightening) of monetary policy looks likely to herald a long period of lower (or higher) short-term rates will it simultaneously put much downward (or upward) pressure on long-term rates.

A final factor that matters more as one looks further along the maturity spectrum is the relative creditworthiness of different borrowers. Because the risk of default is less of a concern over shorter periods of time, lenders tend not to charge very different interest rates for more and less secure borrowers of short-term funds. Over longer periods, however, the uncertainties associated with lending to less creditworthy customers loom larger, and the interest rate spreads on loans to them and on loans to their more secure counterparts tend to be wider. If monetary policy actions cause actual and potential lenders to reassess their views of the relative security of different borrowers — when, say, a tightening makes bankruptcy of a heavily indebted firm in a cyclical industry look likelier — they may actually move interest rates for different long-term borrowers in different directions.

As far as market interest rates are concerned, then, the Bank of Canada has strategic importance in the overnight market for high-powered money because only the Bank can increase or decrease its overall supply, which gives it a decisive influence on the overnight interest rate. The Bank's direct influence on other interest rates declines as one moves along the maturity spectrum. For this reason, spreads between nominal interest rates of various maturities provide important information about the stance of monetary policy. An overnight rate that is persistently well below a representative money market rate — such as the yields on one-month bankers' acceptances or treasury-bills — indicates that the Bank is encouraging financial intermediation and growth of liquidity because, in such circumstances, financial institutions can make money by borrowing in the overnight market and making short-term loans (by buying money market securities, for example). An overnight rate that is persistently well above a representative money market rate indicates, on the contrary, that the Bank is tightening and discouraging lending. Overall, however, monetary policy has no *direct* influence in long-term markets. Its effects — and, hence, the spread between the yield on short-term rates and the yields on 5-, 10-, or 30-year bonds — depend on how the current stance of policy influences expectations about the future state of the economy in general and of inflation in particular.

The Money Channel

Accounts of how monetary policy affects the economy that allow for these indirect and even contradictory effects of central bank actions on some interest rates are more satisfactory than simple textbook models in which an economy has only a single interest rate under central bank control that affects spending, the level of aggregate demand relative to the stable inflation level of output, and, ultimately, the inflation rate. More sophisticated accounts of the mechanisms at work, however, suggest that, beyond the behaviour of market interest rates, policy-induced variations in the quantity of money also play a distinct role in transmitting the effects of monetary policy, through what is sometimes referred to as the *money channel*.[10]

The possibility that the interaction of the supply and demand for money can have its own effects on the economy arises from three key facts. First, the banking system's balance sheet must balance — when banks create new credit by lending, they must also create new liabilities, prominent among which are easily chequable deposits that look and feel to bank customers like *nominal* money. Second, those customers — who, when we think of the banking system in aggregate, are not other banks but individuals and firms outside the deposit-taking sector — have preferences about how much of their wealth they wish to hold in money as opposed to other assets. Finally, although any individual member of the nonbank public can react to excess nominal money balances by increasing cash outlays, and to a deficient stock by reducing them, the public as a whole can do so only by transacting with the banking system.

For monetary policy, the implications of these circumstances arise from the fact that, when the central bank makes overnight funds more readily available to banks, which then respond by making more loans on easier terms, the banks also of necessity create more deposits. The immediate effects of the increased borrowing that lower interest rates bring about were described earlier. However, a second set of reactions is triggered by the fact that, once new credit has been granted and borrowers have spent it, the individual firms and households that provide the goods and services purchased by the new credit find themselves holding a greater share of their assets in the form of money than they intended.[11]

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[10] The following discussion describes what has long been referred to, notably by Bank of Canada researchers, as an "active money" view of the transmission mechanism. Engert and Selody (1998) discuss this view in some detail; Longworth (2003) provides a recent comprehensive survey of how the Bank's current policy framework is configured to take account of the insights it yields. Both these papers contain extensive references to earlier Bank of Canada work on these matters.

To the extent that firms and households react to their excess money by exchanging the banks' monetary liabilities for nonmonetary liabilities — for example, by buying a long-term guaranteed investment certificate (GIC) with a demand deposit — the economy's excess stock of readily spendable money declines with no further effect on aggregate demand. To the extent, however, that firms and households use their excess money to buy goods, services, or financial instruments from other firms and households, the excess does not disappear; rather, it changes hands, and affects aggregate demand as it does so. As these spenders rebalance their portfolios to obtain the mix of money and other assets they are comfortable with, the recipients of their spending are induced to begin their own rebalancing. This process continues either until all the newly created money finds its way to households and firms whose transactions with the banking system extinguish the excess, or until real output and/or prices in the economy as a whole have increased enough that the newly created money no longer exceeds the amount households and firms are willing to hold.

Clearly, the operations of this money channel are drawn out over time and can be widely spread across the economy. Equally clearly, their importance relative to the effects of the credit channel in any particular economy at any particular time cannot be established by an *a priori* argument. As we shall see below, a variable sometimes called the *money gap* — which measures the rate of growth of the nominal money supply relative to the rate of growth of a crude estimate of the economy's demand for money, measured by the rate of growth of nominal gross domestic product — can be used in efforts to gauge its empirical importance.

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[11] This view of the demand for money highlights its place in the asset portfolios of households and businesses, and suggests that the size of their balance sheets should be a key determinant of the demand for currency, demand deposits, and so on. In practice, the greater availability of data on flows than on stocks makes it convenient to relate demand for money to aggregates such as gross domestic product (GDP), which we do below. Since stocks and flows in the economy are intimately related — GDP, for example, can be conceived as a return on total wealth — this shortcut poses no major intellectual problems.

Of the many types of bank liabilities, some are more pertinent to the workings of the money channel than others. Some measures of money are extremely broad and include such items as Canada Savings Bonds and units of money market mutual funds, which are close substitutes for GICs and treasury bills but rarely used to purchase goods and services. Other, narrower measures of money — for example, M1, which includes only currency outside banks and the chequable demand deposits of the chartered banks — are highly liquid and frequently used to purchase goods and services.[12]

Indeed, M1 is a measure of the kind of highly liquid money one would expect to play a particularly prominent role in the transmission of monetary impulses to the economy. As we explore further below, a measure of the money gap based on M1 has often provided useful signals of upcoming changes in spending and inflation. Even so, useful taxonomies of money need to account for innovations and institutional changes in the banking industry. The spread of interest-bearing demand deposits in the 1970s, to cite one key example, blurred the previous distinction between saving accounts, which bore interest but were not chequable, and transactions-oriented accounts, which did not bear interest. As we discuss in Chapter 6, financial innovation continued to play an important role in the 1990s, creating serious difficulties for attempts to interpret the role of the money channel during that period.

Taylor Rules

The attempt by central banks to affect aggregate demand — and thereby to control inflation — by manipulating the short-term interest rates under their influence has inspired researchers to try to devise a simple interest rate "rule" that would summarize the link that runs from the gap between actual and target inflation — and perhaps also from the gap between output and its stable inflation level — to changes in the policy interest rate. More than a century ago, Swedish economist Knut Wicksell ([1898] 1936) advocated a version of such a rule to replace the gold standard rules that were then in place; the Bank of Sweden actually adopted Wicksell's rule for a few years in the early 1930s (see Jonung 1979). Nowadays, however, such rules are generally known as "Taylor rules" after U.S. economist John Taylor, whose 1993 paper on the topic generated an extensive and still lively academic literature.

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[12] Kottaras (2003) documents the Bank of Canada's ongoing work to make historical measures of money consistent with current classifications.

Taylor's original work presented the rule as a descriptive device, characterizing the way the U.S. Federal Reserve had actually conducted monetary policy in the then-recent past. Its prescriptive implications were, however, apparent from the outset. Accordingly, the ease with which variations on a basic Taylor rule can be formulated has inspired quantitative investigations of such questions as: what is the appropriate balance between using past values of the relevant variables and trying to be forward looking? how powerful should be the interest rate response to new information? how quickly should central banks try to bring a straying inflation rate back on track? and could wrong answers to these last two questions produce destabilizing policy?[13]

Careful thinking about the control problems that the "Taylor rule" formulation addresses highlights two key observations Wicksell ([1898] 1936) made, but which have often been neglected since. First, what matters for monetary policy is not the absolute value of the short-term interest rate, but its value relative to the rate that would be "neutral" in its effects on aggregate demand. Second, this neutral rate changes over time. An interest rate that might seem prohibitively high when the economy is depressed could seem extremely low during a boom.[14] In a nutshell, then, *the appropriate dependent* variable for a prescriptive Taylor rule is the level of the policy interest rate relative to the value of the neutral rate, which tends to be a moving target. While Taylor rules provide a useful way of thinking about monetary policy issues, they do not provide a mechanical guide to policy, let alone a guarantee of success.

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[13] For interested readers, Woodford (2003) provides an up-to-date and authoritative overview of this literature.

The Role of the Exchange Rate in an Open Economy

Earlier, we briefly mentioned the role of net imports in reconciling differences between aggregate demand and aggregate output in the economy. Here, it is convenient to discuss how economic relations with the rest of the world — obviously highly relevant to an open economy such as Canada — complicate the transmission of monetary impulses to spending, output, and inflation, and what that might imply for monetary policy.

The monetary authority of an open economy must decide whether it is going to maintain a fixed exchange rate for its domestic currency against other currencies or let the market determine the domestic currency's international value. If it chooses the former option, it must buy and sell the domestic currency in whatever amount is offered or demanded at that price in the foreign exchange market. If market conditions are pushing up the foreign exchange price of the domestic currency, the monetary authority must buy foreign currency assets and sell domestic currency; conversely, if market conditions are driving down the foreign exchange price of the domestic currency, the authority must sell foreign currency assets and buy domestic currency. This requirement ties international transactions and domestic monetary conditions tightly together, because buying foreign currency with domestic currency expands the base of high-powered money, which, in turn, lowers short-term interest rates and promotes faster spending and higher prices.

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[14] Note that this concept of a neutral rate is not quite the same as the "natural rate of interest." The latter phrase refers to the value of the interest rate that will be neutral in its effect on the level of aggregate demand in the economy *when it is operating at the stable inflation rate level of output, so that the output gap is zero and there is neither upward nor downward pressure on the inflation rate.* An extremely complicated literature developed in the 1920s and 1930s dealing with the many ambiguities and pitfalls, both semantic and substantive, that surround the concept of a natural rate of interest. The interested reader is referred to Laidler (1999, part 2, "The Wicksellians") for an account of work whose authors knew a great deal more about these issues, and their relevance for the conduct of monetary policy, than has yet been recovered by the modern literature on Taylor rules.

Central banks often try to "sterilize" foreign exchange transactions with domestic monetary policy operations, such as open market purchases and sales of government securities. In general, however, these attempts create only minor variations in the timing of the impact on domestic monetary conditions. This is because the offsetting actions tend to move short-term interest rates in a direction that reinforces the initial foreign currency flows — upward in the event that the bank is trying to restrain growth in high-powered money; downward if it is trying to promote it — thus reinforcing the exchange rate pressures that prompted the sterilization in the first place.

If upward pressure on the exchange rate is occurring because domestic demand is relatively low and there is a current-account surplus, the easier monetary policy arising from the central bank's efforts to hold down the value of the currency will tend to boost demand and prices and shrink the surplus. On the other hand, selling foreign currency assets and buying domestic currency to support the foreign exchange rate — as might happen if an overheated domestic economy was creating a current-account deficit — has the opposite effect. In short, under a fixed exchange rate, the domestic price level and its rate of change are a function of the transactions necessary to hold the exchange rate steady.[15]

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[15] A fixed exchange rate is not necessarily incompatible with medium-term domestic monetary stability. It is easy to imagine circumstances in which actions needed to stabilize the exchange rate turn out to be precisely those needed to stabilize the domestic economy. Indeed, as we shall see later, a large part of the case made by advocates of replacing Canada's current monetary order with an arrangement fixed on the U.S. dollar rests on the view that...

By contrast, when the currency is free to find its own price in the foreign exchange market, as the Canadian dollar is now, international transactions will move that price up and down. Under those circumstances, the exchange rate can play a role in the mechanisms through which monetary policy affects demand and influences inflation — a role that can be significant, and is in many respects parallel to that played by interest rates. Just as a loosening (tightening) of monetary policy exerts downward (upward) pressure on interest rates, particularly at the short end of the spectrum, so such moves tend to affect the exchange rate. Borrowing and lending across the national border, again particularly at the short end of the spectrum, are sensitive to the relative rates of return available on either side of the border. Other things being equal, a decline (increase) in domestic interest rates tends to create a capital outflow (inflow) and, hence, a decrease (increase) in the exchange rate; this, in turn, leads to a rise (fall) in the demand for exports and a tendency for the composition of domestic demand to shift away from (toward) imports.

Monetary Conditions

In an open economy, then, monetary policy affects demand through the exchange rate as well as through interest rates and the supply of money. This consideration has led many observers and monetary policy practitioners to summarize the first two of these effects under the label "monetary conditions." Combinations of lower short-term rates and a lower exchange rate are said to create easier monetary conditions, while combinations of higher interest and exchange rates are said to create tighter conditions; when the two variables move in opposite directions, they tend to offset each

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Note 15 - cont'd.

...doing so would indirectly promote domestic monetary stability. However, such stability would be the indirect effect of successfully maintaining a fixed exchange rate, not the direct consequence of successfully pursuing it as a goal in its own right. As we shall also see later, not everyone is confident that it would, in fact, materialize.

other. Indeed, because it is possible to quantify, on an "other things being equal" basis, the effects on aggregate demand of changes in both interest rates and the exchange rate, it is also possible to combine these two variables into a single *monetary conditions index* that summarizes the changing influence of monetary policy on the economy by these two routes.[16]

Here, however, as so often in economics, the qualifier "other things being equal" looms large. Although monetary policy affects both interest rates and the exchange rate, and through them the level of demand in the economy, other factors also affect these variables.

We have seen, for example, that when the business community is optimistic about the profitability of investment, its borrowing increases, putting upward pressure on interest rates even as credit and the money supply expand. In that case, the interest rate that would represent a neutral stance would rise and monetary policy that held short-term interest rates steady would, in fact, become more expansionary. Conversely, pessimism about profits, declining borrowing, downward pressure on interest rates, and slowing growth of credit and money would suggest a declining neutral rate, which likewise presents monetary policy with a moving target. Similarly, when an expanding world economy drives up the demand for exports, the exchange rate tends to appreciate, even as the boom boosts the pressure of demand in the economy and, hence, tends to drive up inflation. Under these circumstances, a central bank that attempted to hold interest rates and the exchange rate steady would have to emit more high-powered money, thus validating increased inflationary pressure and perhaps even intensifying it. To hold inflation stable, therefore, interest rates and the exchange rate would need to rise and monetary conditions, as measured by an index of their values, would appear to tighten. The reverse is true in the case of a declining exchange rate in the event of a slump.

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[16] Pioneering work on constructing a monetary conditions index for Canada seems to have begun at the Bank of Canada in the late 1980s. Duguay (1994) and Freedman (1994) are among the significant publications dealing with the outcome of this work.

A Taylor rule for an open economy could use a monetary conditions index to assess and guide the stance of monetary policy instead of the interest rate that normally appears in such rules. Just as the interest rate must always be evaluated in comparison to its neutral level in a conventional Taylor rule, however, so a monetary conditions index needs to be evaluated relative to a desired value — the value that will steer the economy toward its steady inflation level of capacity use, for example, or create an output gap that will move inflation back to a target level. This desired level will vary over time. Keeping track of changes in the desired value of a monetary conditions index, therefore, presents a major challenge — one that Canadian monetary policy did not always successfully confront in the 1990s.

4 Monetary Policy, Fiscal Policy, and Politics

Monetary policy does not operate in a vacuum as a tool of macroeconomic management. It works alongside, and interacts in various ways with, fiscal policy. And both monetary and fiscal policymakers are agents of governments subject to democratic control. The interactions between monetary and fiscal policy, and the accountability structures that govern them, are interesting in their own right, and important in understanding the evolution of Canadian monetary policy and the Canadian economy over the past decade.

Interactions between Monetary and Fiscal Policy

Fiscal policy — the level and structure of taxes and government spending — can exert a powerful influence on aggregate demand. Indeed, in contrast to widely held opinions in the 1930s, when the Bank of Canada's mandate was drafted, the majority of economists in the 1970s regarded fiscal policy as more important for the economy than monetary policy in almost every respect. It took two decades of inflation to re-establish general understanding of the crucial role monetary policy plays as the principal cause of, and hence cure for, instability in the time path of the price level. Fiscal policy nevertheless remains part of the picture, affecting the economy and interacting with monetary policy in two distinct ways.

Fiscal Effects on Aggregate Demand

In the first place, government spending and tax policies can work directly on the volume and pattern of real spending, affecting the growth of aggregate supply — that is, the economy's ability to generate goods and services — in the medium and long term. A further key influence of fiscal policy that traditional, so-called Keynesian, analysis of macroeconomic policy emphasizes is its shorter-term effect on aggregate demand. Spending by governments on goods and services represents just as much a demand for current output as does consumption spending by households or investment outlays by firms. Less direct in their impact, but also important, are variations in taxes and transfer payments, which can encourage or discourage spending by households and firms and, hence, influence the overall level of demand.

From this perspective, the potential implications of changes in fiscal policy for a central bank seeking to stabilize inflation are straightforward. Other things being equal, when higher government spending on goods or services and/or a combination of lower taxes and higher transfer payments boost aggregate demand, interest rates and/or the exchange rate will need to rise to offset this impact. When lower spending and/or higher taxes net of transfers dampen demand, interest rates and/or the exchange rate will need to fall. To put it another way, the more (less) expansionary is fiscal policy, the tighter (easier) monetary conditions have to be to achieve stable inflation — a general observation that had a specific application in Canada in the 1990s.

The Government Budget Constraint

Another key link between monetary and fiscal policy was also evident in Canada in the 1990s, especially around the middle of the decade. Government budgets do not affect only current flows of spending, since current and prospective government spending not covered by current tax revenue (or asset sales) must be financed by borrowing now and in the future. So fiscal policy also affects the stocks of financial assets and liabilities on which interest must be paid in the future and which domestic and foreign lenders must be induced to hold.

When government net debt is relatively low for a long period, as it was in Canada from the mid-1950s to the late 1970s, individuals and firms likely pay little attention to the fact that today's government deficits will have consequences for tomorrow's budget balances, and they are therefore unlikely to increase their savings in the expectation of having to pay higher taxes in the future to service and repay debt. In that case, expansionary fiscal policy will likely have some of the stimulative effects traditional Keynesian analysis predicts. If individuals and firms do pay attention, however, and increase their current savings as the budget goes into deficit, fiscal policy's influence on the economy may be less stimulative. Under these circumstances, the effect on aggregate demand of increased government spending unaccompanied by higher current taxes will tend to be offset by an increase in private sector saving undertaken in anticipation of the taxes that will have to be levied later to service and discharge the debt that the government is currently running up.

In a period when the population starts to pay attention to the accumulation of government debt — as might happen when an economic shock, such as an increase in interest rates, demonstrates the impact that past borrowing is having on the current budget — the effects of fiscal policy changes on aggregate demand will cease to be what conventional Keynesian analysis predicts.[1] It may be that growing realization in the early 1990s that the trajectory of public debt in Canada was unsustainable helps to explain why increases in cyclically adjusted budget deficits appear not to have stimulated aggregate demand very much at that time, and why the fiscal consolidation that took place in mid-decade seems not to have been very harmful to the level of economic activity.

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[1] The special case where an expectations-driven private sector response to a change in fiscal policy exactly offsets its effect on aggregate demand was first analyzed fully by Barro (1974). Buchanan (1976) subsequently pointed out that much of Barro's analysis had been anticipated by David Ricardo in his writing about Britain's public debt problems at the end of the Napoleonic...

Borrowing from the Central Bank

As the costs of servicing public debt rise, ever-larger tax increases are needed to bring the budget back into balance, and it becomes increasingly difficult to sell more debt to private lenders both at home and abroad. Under those circumstances, governments become eager to find new sources of funds to tap, among which, historically, central banks have ranked high.

This role for central banks is no accident. The evolution of central banking from the late seventeenth century onward was intimately associated with the need of national governments to raise funds through borrowing and to foster the development of institutions that could support an orderly market for their debt. Even in present-day Canada, one of the Bank of Canada's assigned tasks is to act as the federal government's agent in the issuance, administration, and retirement of government debt. When it engages in such open-market operations as purchase and resale agreements, moreover, the Bank buys and sells debt as a principal. As with most central banks, the counterpart to the high-powered money that dominates the liability side of the Bank of Canada's balance sheet is the federal government debt that makes up most of the asset side of its balance sheet. A government in fiscal trouble, therefore, will be tempted to pressure the central bank to buy more government

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Note 1 - cont'd.

...Wars — hence the term "Ricardian equivalence" to describe it. The possibility that fiscal contractions could stimulate a private sector boom by improving expectations about the future fiscal environment appears to have been borne out in several European countries in the 1980s (see Giavazzi and Pagano 1990).

Table 1: ***Bank of Canada Balance Sheet, GDP, Prices, and Federal Government Debt, 1990 and 2003***

	1990	**2003**
	($ billions except as noted)	
Bank of Canada balance sheet		
Assets		
Government of Canada securities	20.0	41.2
Other assets	5.3	2.9
Total assets	*25.3*	*44.1*
Liabilities		
Notes in circulation	23.0	42.2
Canadian dollar deposits of CPA members	1.6	0.5
Other liabilities	0.7	1.4
Total liabilities	*25.3*	*44.1*
GDP and prices		
Nominal GDP	679.9	1,214.6
GDP price index (1997 = 100)	88.9	111.2
Federal government debt		
Total securities outstanding	317.1	439.1

Source: Bank of Canada, *Banking and Financial Statistics*, various issues, tables B1, G4, H1, H3.

debt in exchange for newly created high-powered money than it otherwise would do.

Yet, a central bank that creates high-powered money to help finance a cash-strapped government cannot, except by coincidence, simultaneously achieve the rate of money creation needed to keep inflation low and stable. As Table 1 shows, at the end of 1990, the Bank of Canada's balance sheet totalled $25.3 billion in assets and liabilities, with $20.0 billion of its assets consisting of federal government debt and essentially all its liabilities consisting of banknotes and deposits held by financial institutions. At the end of 2003, the Bank's balance sheet had grown to $44.1 billion; its holdings of federal debt stood at $41.2 billion and, again, high-powered money made up virtually all of its liabilities. During those 13 years, then, a $19 billion increase in the Bank's holdings of federal debt supported an equivalently sized increase — some 75 percent — in high-powered money. The latter increase, in turn, supported a 79 percent increase in nominal spending, of which 25 percent represented a cumulative rise in the price level. During the same period, total federal government securities outstanding rose from $317.1 billion to $439.1 billion, an increment of $122.0 billion, or some six times the rise in the amount in the Bank's hands.[2] It is clear that, in the absence of an extraordinary change in the relationship between the amount of high-powered money issued by the Bank and aggregate spending, Canada would have experienced much higher inflation if the Bank had monetized significantly more of the increased federal debt.

In short, to the extent fiscal policy financed by deficits looks likely to persist, it threatens the durability of low inflation; to the extent this threat is perceived by the public and influences their expectations, it will put upward pressure on nominal interest rates and downward pressure on the exchange rate; and to the extent expectational effects spill over from capital markets and/or directly affect wage- and price-setting behaviour, it will put upward pressure on the current inflation rate as well. That is why chronic budget deficits eventually will undermine any monetary policy regime aimed at price stability by forcing the monetary authorities to accommodate the government's need for cash. Even before things come to this pass, moreover, the response of individuals and firms to the threat that they might occur drives up interest rates, intensifying the pressure on government to do the very thing private sector agents fear.[3]

Although the fiscal deterioration that occurred in Canada up to the mid-1990s did not reach the point where fears that the Bank of

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[2] The peak in federal securities outstanding was in 1996, when the tally stood at $471.5 billion (Bank of Canada 2003a, table G4).

[3] In a provocative paper, Sargent and Wallace (1988) model an abstract world in which expectations of future inflation are assumed to exercise a decisive influence on its current behaviour. The authors show that, under such circumstances, bond-financed budget deficits would drive up current inflation by more than deficits financed by money creation because of the size of the eventual monetization of debt that bond finance would imply. While this result should not be taken literally, it provides a critical insight into the influence of government debt accumulation on expectations of future inflation, and through those expectations on current behaviour.

Canada would monetize debt became an important determinant of long-term interest rates, the fact that fiscal policy was on a course inconsistent with the maintenance of low inflation in the long run was widely remarked (see, for example, Kierans et. al. 1994; Robson 1994). We return to this matter in more detail in Chapter 5.

Credibility, Transparency, and Accountability

Such considerations as these bring us face to face with important questions about the credibility and transparency of monetary policy.

Policy Credibility and Macroeconomic Stability

We saw in Chapter 3 that monetary policy that generates an inflation rate consistent with the expectations of the private sector will also tend to support demand at a level consistent with the stable inflation levels of output and employment. If this level seems unsatisfactorily low, raising it requires, not monetary stimulus, but policies that will raise the effective labour force, the capital stock, productivity, or all three. At the same time, inflationary expectations have an important influence on nominal interest rates and on wage- and price-setting behaviour. Where expectations of stable low inflation are firmly held, the response of interest rates, particularly at the longer end of the spectrum — and of wages and prices as well — to temporary shocks to the economy is likely to be more muted than it otherwise would be.

Taken together, these two factors imply that firmly held expectations about inflation should dampen the effects of short-term shocks on private sector decisions, and thus bring an extra degree of built-in stability to any economy. So, in a virtuous circle, they should also mute the very fluctuations in inflation that could undermine confidence in the future stability of inflation, contributing further to stability in the real economy. The creation and maintenance of the credibility of stable inflation is thus just as much a part of an inflation-targeting regime as the actual achievement of the target. Obviously, the two tasks overlap, because the achievement of any target will usually enhance the general public's belief in the authorities' ability and willingness to do it again. But the maintenance of credibility needs help from other measures too, for the simple reason that expectations about policy are concerned with the future, while its visible successes necessarily lie in the past.

Transparency

The credibility of monetary policy is affected by many more factors than fiscal policy's capacity to undermine monetary policy when the two are incompatible. In recent years, the maintenance of that credibility has also been a key reason for central banks to make their conduct transparent.

A private sector that understands the goals of monetary policy and how the central bank intends to achieve them, and that is kept informed in a timely fashion about the bank's actions and the reasons for them, is also in a position to assess the likely outcome of policy and to make decisions accordingly. To the extent that policy actions are indeed properly matched to their intended outcome, private sector activities will then be in step with policy and vice versa, reinforcing both the economy's stability and the credibility of policy.[4]

Policy transparency also serves another goal. Although debates about the goals of economic policy and the best means of achieving them necessarily have a significant technical economic content, they are also, in the last analysis, political in nature. It is a basic democratic principle that those who are affected by a policy ultimately should be in a position to choose its goals and to hold those appointed to achieve them accountable for their performance. Transparency about the ongoing conduct of monetary policy is thus necessary to ensure that democratic principles are observed in this important activity.

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[4] The analysis of policy transparency and its desirability forms the overarching theme of the lectures gathered in Thiessen (2001). Siklos (2003) provides a recent study of questions concerning the transparency of monetary policy in Canada, particularly as it impinges on the interactions of policy with the behaviour of financial markets.

Central Bank Independence and Accountability

How to design a central bank and fit it into the general framework within which economic policy is made, so that it can simultaneously be subjected to democratic control and deliver low inflation, is a much-debated question. Some commentators argue that the trick is impossible, and certainly there are good reasons to believe that subjecting monetary policy to the same direct parliamentary control as tax and spending programs would give it an inflationary bias.[5] Two such reasons, in particular, are important.

First, expansionary monetary policy delivers output gains before its inflationary consequences come through. Since politicians who wish to accomplish anything must be elected to office at more or less regular intervals, these timing considerations may induce them to lean, if they can, toward expansionary policies as elections approach. The result is *time-inconsistent* policies, meaning that even when politicians share the views of ordinary citizens in preferring low inflation in the long term, electoral considerations induce them to pursue policies in the short term that are ultimately inflationary. The outcome of that approach is not a sustained real gain, but a higher average inflation rate than someone taking only a long-term view would either want or create.

Second, and working in tandem with time inconsistency, politicians tend to produce bundles of policies to attract support from coalitions of voters with different special interests, and the politicians who attract the most populous coalitions are those who ultimately gain office. Unfortunately, the harm inflation does can be widespread across the economy, even at rates low enough to push the need to control it well down the list of the special priorities of any particular interest group. University professors and students, for example, are likely to support more funding for education, farmers will want more aid for agriculture, public sector workers will want higher wages and richer pensions, and so on. And each group will attach more weight to achieving its own special priorities than to avoiding the inflationary consequences of the general expansion of government spending that their combined success might generate.

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[5] Laidler and Robson (1993) pursue these arguments at greater length.

A government that succumbs to such pressures for increased spending but hesitates to raise taxes to pay for it is likely to run budget deficits that, in the short term, are politically easier to finance through the central bank than by ordinary borrowing. Thus, packages of policies — each of whose components does a noticeable amount for a particular small group and just a little harm to everyone by increasing the chances of inflationary monetary expansion — sometimes get adopted even if the harm outweighs the collective good stemming from the specific policies when things are considered from an economy-wide perspective.[6]

Such considerations help to explain why most democracies separate the power to spend money from the power to create it.[7] Elected governments achieve this separation by delegating the conduct of monetary policy to a central bank that is to some degree insulated from the pressures of day-by-day politics. This insulation does not necessarily require "independence," in the sense that the central bank can set and pursue whatever goals for monetary policy it thinks fit. It does involve ensuring that central bankers are not at the daily beck and call of elected ministers, however, even as they remain accountable for their activities in some meaningful way to those who appoint them and, through them, to the electorate.

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[6] Kydland and Prescott (1977) is the classic formal analysis of the time-inconsistency problem. Olson (1965) provided the seminal study of the workings of interest groups in the formation of economic policy.

[7] Although this account of time inconsistency and special interests describes the situation in democratic countries, similar forces operate in nondemocratic countries. It may be the greater ability of democratic countries to build institutional bulwarks against these forces that explains why their inflationary experience has not, in general, been worse than that of nondemocratic countries.

Goal and Instrument Independence

Modern central banks seldom enjoy complete goal independence.[8] In virtually all jurisdictions, politicians reserve to themselves some say in setting the goals of monetary policy, though the extent of that say varies considerable across countries and monetary areas.

The U.S. Federal Reserve System, for example, is bound by an act of Congress to pay attention to the two goals of full employment and price stability, although it has neither been assigned nor has it adopted a quantitative interpretation of either. Increasingly common nowadays are targets for price-level behaviour. The assigned goal of the European Central Bank (ECB) is price stability, laid down in the international Treaty of Maastricht, which makes it comparatively difficult to amend. However, the ECB has been left free to choose what the phrase will mean in practice, and it has chosen to strive for an inflation rate that is slightly below an upper bound of 2 percent annually. There is no formal mechanism whereby European politicians can change this goal, even if they wished to do so. The Bank of England, at the other extreme, has its quantitative inflation target set for it by the elected government, while in Canada, as we have seen, inflation targets are agreed jointly by the finance minister and the Bank of Canada.

Modern central banks often have considerable *instrument independence*, however, which gives them a great deal of latitude in choosing how to conduct policy to achieve their assigned goal. Instrument independence is critical to separating the power to create money from the power to spend it, and has the further virtue of respecting the technical expertise needed to implement monetary policy successfully.[9] Even so, instrument independence is not, in and of itself, sufficient to insulate monetary policy from government spending decisions. The extent to which such insulation is accomplished also depends on the way the goals of monetary policy are set.

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[8] The distinction between goal and instrument independence, and its significance for central banking, is analyzed in great detail in Fischer's (1994) magisterial paper.

In a jurisdiction where politicians have reserved to themselves the right to set a target for the inflation rate, they can, in principle, always use that power to compel the central bank to pursue inflationary policies. In practice, however — recent British experience being a case in point — the need for politicians to state publicly a precise goal for inflation and, hence, to make any intention of changing it clear to the electorate likely acts as a powerful deterrent to the abuse of monetary policy. The maintenance of low inflation is at greater risk if politicians are free to set goals for taxation and government expenditure without being required publicly to discuss their possible consequences for inflation, and even more so when such powers are combined with the ability decisively to influence the setting of the instruments of monetary policy.

Unhappily for a tidy classification of desirable arrangements for the democratic governance of central banks according to the degree of protection they provide against the politically opportunistic printing of money, even a central bank with strong instrument independence cannot and should not be granted complete power to set policy as it sees fit. Arrangements that empower a central bank, in the ordinary course of events, to set interest rates and other policy variables in whatever manner it thinks consistent with the goal chosen for it must also envision the possibility that the central bank will perform its tasks so ineptly that politicians will need to intervene. A robust governance system must always allow elected representatives to hold monetary policymakers to account when they fail to attain their assigned goals, and to ensure that those who have made avoidable mistakes out of lack of skill or attention to their duties can be reprimanded or replaced.

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[9] Not all central banks have instrument independence. It was only in 1997 that the Bank of England regained the power to set its own key short-term policy rate without political interference, which it had lost when the Bank was taken into public ownership in 1945. Before 1997, final decisions about the rate were in the hands of the Chancellor of the Exchequer (Britain's finance minister), an arrangement that some commentators feel contributed to the relatively poor performance of the British economy on the inflation front in the second half of the last century. It is nevertheless worth noting that, when British monetary policy began to be brought under control in the early 1980s, it was as a result of decisions taken by the elected government of Margaret Thatcher. To say that political processes place inflationary temptations before politicians is not to say that they will always give in to them.

Canadian Arrangements

The evolution of the Bank of Canada's relations with elected politicians since its founding has had several twists and turns. The Bank became completely publicly owned in 1938, barely a year before the outbreak of World War Two, and only as normal peacetime conditions returned in the late 1940s, and particularly after Canada adopted a flexible exchange rate in 1950, could the framework laid down in the original *Bank of Canada Act* be tested. After a few years, it was tested and found seriously wanting.

In the second half of the 1950s, deep disagreements began to arise between the Bank, under then-governor James Coyne, and successive elected governments about, among other things, how tight monetary policy ought to be. Coyne believed that the *Bank of Canada Act* gave him final authority over monetary policy decisions. In the early stages of the debate, both Liberal and Progressive Conservative governments seemed to agree with him, with ministers of both parties successively fending off parliamentary questions about monetary policy by arguing that it was the Bank of Canada's responsibility, not theirs. Matters came to a head at the beginning of the 1960s, however, when John Diefenbaker's PC government began to insist that it had the power to overrule the governor on monetary policy decisions. At that time, as now, the governor's appointment was to a seven-year term of office and made with cabinet approval, with his tenure subject only to his "good behaviour" — a phrase implying that, like a judge, for example, but unlike a civil servant, he could be dismissed for outright incompetence or malfeasance, but not for failure to implement policies laid down by the government of the day.

The Diefenbaker government, which was politically committed to policies significantly more expansionary than Governor Coyne was willing to countenance, attempted to break the monetary policy deadlock by passing legislation in the House of Commons declaring the post of governor vacant. Although the bill failed in the Senate, thus exonerating Governor Coyne of any suspicions of malfeasance, he nevertheless resigned on the grounds that he could no longer continue work effectively, having so evidently lost the government's confidence.[10]

Coyne's successor, Louis Rasminsky, made it clear, even before assuming office, that the future division of responsibility for the conduct of monetary policy between the elected government and the Bank of Canada had to be clarified if he was to accept the appointment. The issue was resolved by the adoption of what is known as the dual responsibility doctrine, under which responsibility for monetary policy normally resides with the Bank, but the finance minister can exercise final authority in the area, on behalf of Parliament, where ultimate political authority in Canada always resides. This principle was explicitly set out in a 1967 amendment to the *Bank of Canada Act*, together with precise instructions about how the minister was to exercise his powers should a disagreement ever arise with the governor of the Bank about monetary policy.[11]

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[10] The failure of the bill in the Senate was significant because the propriety of Governor Coyne's pension arrangements, and the manner in which they had been made, became an issue in his dispute with the government, and placed him under implicit suspicion of malfeasance. The Senate's decision seemed to him and his supporters to exonerate him in this matter. Laidler and Robson (1993, 41–43) give a brief account of the Coyne affair and the dual responsibility doctrine that emerged in its wake, and provide references to the key literature these events generated.

[11] As we pointed out in an earlier volume (Laidler and Robson 1993, 43–44), the fact that the government pegged the exchange rate shortly after Rasminsky's appointment meant that the instrument independence the dual responsibility doctrine conferred on the Bank did not become effective until the exchange rate was allowed to float freely again at the end of the decade.

In such a case, the minister is required to issue, then publish, a written directive as to what actions the governor must take; moreover, the document must be both specific in its terms and in effect for a well-defined, but rather short, period of time. Rasminsky also made it clear when he took office that, on receipt of a directive, the governor would resign, a provision that remains explicitly understood, although no mention of it appeared in the act as amended in 1967.

To date, no finance minister has issued such a directive, but clearly the balance between the Bank of Canada's independence and its political accountability is nicely balanced under the dual responsibility arrangement. Among the reasons for the durability of this arrangement is the damage that the issuance of a directive and the governor's subsequent resignation might inflict on the stability and credibility of the monetary system, which creates a powerful incentive for both sides to make it work.

The dual responsibility doctrine, as it was laid down in 1967, did not distinguish the goals of monetary policy from the instruments used to attain them. It was not until 1991, with the introduction of inflation targets, that these matters were further clarified. As we have seen, the Bank of Canada had committed itself to a rather unspecific "price stability" goal for monetary policy in 1988, and its actions thereafter — particularly the tight money policy implemented in early 1990 — were politically contentious and opened the Bank to much public criticism. It was clear that its policy intentions needed further clarification. Even so, we now know that the introduction of the formal inflation reduction targets in 1991, which both quantified the goals of monetary policy and laid down a timetable for achieving them, was not an initiative of the Bank, but that of a federal government anxious to ensure that the one-off effects on the consumer price index of the replacement of the manufacturer's sales tax by the goods and services tax would not provide the occasion for an upward wage-price spiral to begin (see Crow 2002, 192–93).

For the government, then, inflation targets had a mainly short-term goal — namely, to send a message to the public at large that it intended any price-level effects stemming from its reform of indirect taxes to be once-and-for-all events. The Bank of Canada no doubt shared this goal, but from its perspective, the targets also put in place a much needed medium-term anchor for monetary policy. From the standpoint of the dual responsibility doctrine, however, their introduction amounted to a statement that the goals of monetary policy were henceforth a matter of negotiation and agreement between the government and the Bank. This point was further reinforced in the wake of the 1993 federal election when Governor Crow, whose term of office coincidentally expired at about the same time, withdrew from consideration for a second term of office because of his unwillingness to accept the views of the new finance minister, Paul Martin, about the form the targets would take after 1995. It is not surprising, then, that Gordon Thiessen, who succeeded Crow as governor in 1993, would in due course make it explicit that, in his view, any future debate about inflation targets between a finance minister and a governor already in office would be settled according to the procedures that had been agreed on in the 1960s (see Thiessen 2001, 82).

The dispute between Crow and Martin attracted widespread attention, and may have influenced another change instituted by Thiessen. Until his appointment, responsibility for the Bank's policy actions rested solely with the governor, making him something of a lightning rod for any public discontent with monetary policy and exacerbating the tendency for any dispute between the Bank and elected politicians to become personalized. In 1994, with the approval of the Bank's board, Thiessen created a Governing Council consisting of himself, his senior deputy governor, and the Bank's four other deputy governors, which thereafter became collectively responsible for monetary policy decisions. Since it is more difficult to issue a directive to a governor who has the support of such a council than to one who stands alone, this move served not only to depersonalize monetary policy a little, but also to strengthen the Bank's instrument independence.

In short, it is now well established that the Bank of Canada shares with the government of the day the power to set monetary policy's quantitative goals under arrangements that ensure that politicians must make a public commitment to those goals. Although it thus has less independence in this sphere than does the European Central Bank, it has more than the Bank of England. At the same time, the logical and empirical links between any quantitative inflation target and the day-to-day actions the Bank of Canada must take to achieve it mean that the joint and public agreement on targets with the government grants the Bank a high degree of instrument independence.

Although the dual responsibility doctrine lies at the centre of the arrangements that link the conduct of monetary policy in Canada to political processes more generally, it is not the only relevant factor here. The Bank is constituted as a Crown corporation, and — apart from the governor, who acts as chairman of its board, the senior deputy governor, and the deputy minister of finance, who is an *ex officio* nonvoting member — its directors are rather short-term (three years, renewable) political appointees of the government. Among their responsibilities are the appointments of the Bank's governor and senior deputy governor, when vacancies occur, subject to the approval of the finance minister acting on behalf of the cabinet.

That these are "good behaviour" appointments and for a period of seven years — which, except by coincidence, as happened in 1993, desynchronize them from the electoral cycle — makes them less likely to become political issues at particularly sensitive times. They are, however, far from free of all influences from the government of the day — nor, perhaps, in a democracy should they be. In 2001, the successful candidate to replace Governor Thiessen was David Dodge, who had been deputy minister of finance when Thiessen was appointed and the "less than 2 percent" goal for price stability was scrapped. Then-finance minister Paul Martin evidently felt strongly enough about this matter in 1993 to lose the services of Governor Crow, and the deeper entrenchment of the less stringent 2 percent inflation goal that has recently taken place under Dodge's governorship presumably also met with Martin's approval. We point this out not to argue that Dodge's appointment was subject to undue political influence of any kind, but to make the unremarkable observation that a finance minister with the authority to give final approval to the appointment of a new Bank governor is likelier to approve of someone who shares his views on important policy issues than someone who disagrees with him.

As for the Bank of Canada's directors, their part-time status discourages attempts on the board's part to interfere with the day-to-day conduct of policy, a responsibility that the *Bank of Canada Act* in any event seems to give to the governor. The board is expected to, and does, oversee the general competence with which the Bank is managed, even down to such matters as assessing the quality of the research that underlies the conduct of policy, but its activities do not impinge on the Bank's instrument independence, always given that it is satisfied that this independence is being used skillfully.

Finally, it should be noted that the Bank of Canada nowadays comments regularly on monetary policy — annually in its report to its stockholders (represented by the minister of finance), quarterly in its two *Monetary Policy Reports* and their two intervening updates, and eight times a year in press releases accompanying announcements of the targets set for the overnight rate. In addition, the governor and other senior officers of the Bank give evidence to parliamentary committees and deliver frequent lectures and speeches throughout the year to interested groups. The Bank also maintains a web site that gives users access to current and historical data, the Bank's policy reports and announcements, the texts of recent speeches by officials, and research publications. All these activities serve the intertwined goals of policy transparency and accountability to the public.

5 The Context and Consequences of Monetary Policy Actions

In the preceding chapters, we reviewed the Bank of Canada's role in the Canadian economy, the economics of monetary policy, and the interaction of monetary policy with fiscal policy and democratic governance generally. In this section, we move from that general background to a specific discussion of the conduct of monetary policy since the beginning of the 1990s. We start, in this chapter, with an account of economic developments during the period and the reactions of policy to them. In Chapter 6, we look more closely at how the Bank's operating framework changed as the decade progressed.

The International Background

As we saw in Chapter 1, the Canadian economy entered the 1990s on an uncertain note, and many of its difficulties during the decade originated as much in international developments as in domestic ones. An account of the actual conduct of monetary policy during those years and the evolution of the policy regime itself can usefully begin with an account of those international developments and their effects on the Canadian economy.

The Spread of North American Free Trade

Perhaps the most significant international development for the Canadian economy in the 1990s was the spread of free trade in North America, beginning with the Canada-U.S. Free Trade Agreement (FTA), which was signed in 1988 and came into force in early 1989. Before the event, its supporters had predicted that the agreement, in addition to its immediate benefits for consumers and users of imported inputs, would lead to a considerable restructuring of Canadian industry as hitherto sheltered plants producing essentially exclusively for the domestic economy disappeared, while others, capable of competing in a continental marketplace, expanded. Subsequent events bore out these expectations in broad outline, although there were some surprising details. An initial period of disruption, with losses of output and employment, was succeeded by an extended period in which the Canadian economy exhibited both expected and unexpected comparative advantages. Indeed, the degree of intra-industry and even intra-firm specialization under the FTA surprised observers.[1]

The extension of the FTA to bring Mexico into the broader North American Free Trade Agreement (NAFTA) that came into force in 1994 had little immediate economic impact on Canada. Canadian exports to Mexico stood then at only about 0.5 percent of total exports, and imports from Mexico were not much more than 1.0 percent of total imports — figures that have grown somewhat since, but that remain relatively small.[2] Indeed, Canada's principal motive in joining NAFTA, aside from the hope of improving on some aspects of the FTA, was defensive — to forestall the development of a series of bilateral free trade agreements on the part of other countries with the United States, which would have made that country a uniquely favourable location for investors seeking to serve the largest-possible market.[3] NAFTA also had the effect of further entrenching North American free trade, making any wholesale renegotiation — along the lines that the FTA's political opponents had initially thought might be feasible — highly unattractive when the 1993 federal election brought them to power and forced them to confront the issue.

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[1] Trefler (2002) is a thorough study, not only of the productivity gains realized from free trade in the 1990s, but also of the costs associated with the restructuring of the economy that went with it.

[2] In 2002, official trade figures showed exports to Mexico amounting to 0.7 percent of total exports and imports from Mexico amounting to 3.1 percent of total imports. Data on Canadian trade with Mexico are admittedly somewhat uncertain, since much of it travels through the United States and shows up in figures for exports to and imports from that country.

At the beginning of the 1990s, then, a major restructuring of the tradables sector of the Canadian economy was getting under way. In such circumstances, firms under pressure from foreign competition in domestic markets and those seeking to expand their sales in the United States alike would have found the transition easier without an appreciating exchange rate. Appreciate the Canadian dollar did, however, to an extent that led some conspiracy theorists to talk about a secret "gentlemen's agreement" between the U.S. and Canadian authorities when the FTA was signed to prevent Canadian firms' reaping benefits from the agreement.[4]

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[3] The danger here was that the United States would end up as the "hub" of a "hub-and-spoke" trading system in which a number of countries had free trade arrangements with the United States but not with one another, thus conferring special advantages on the hub when it came to attracting direct investment in new plants. This possibility, which remains a serious problem as the international economy evolves, is discussed in detail by Wonnacott (1996), who did much to develop the analysis of it from the 1980s onward.

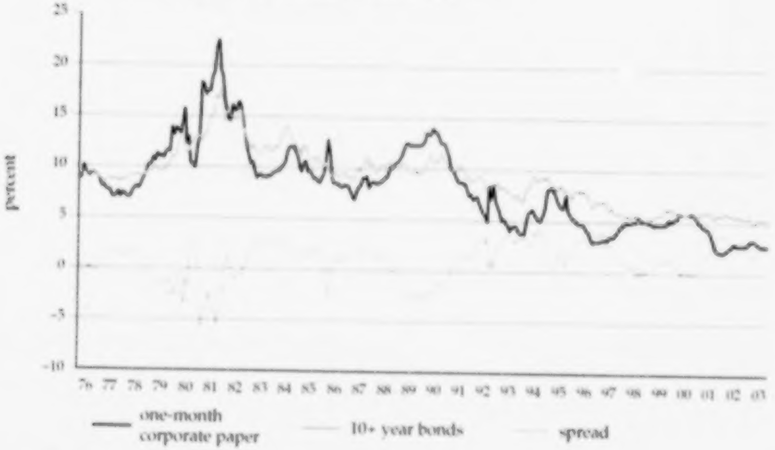
[4] This suggestion seems to have been made first by Sinclair Stevens, a member of the federal cabinet when the FTA was negotiated (Laurie and Sellar 1990). In Laidler and Robson (1993, 143), we characterized this suggestion as "paranoid" and, while some in the United States were unhappy about the competitive implications of the low Canadian-U.S. dollar exchange rate of the mid-1980s, it seems to have no foundation in fact. See Crow (2002, 101–02) for an account of its possible origin.

The Exchange Rate at the Turn of the Decade

The appreciation of the Canadian dollar was, however, firmly rooted in economic fundamentals, some originating in the world economy, others in domestic policy (Laidler and Robson 1993, 93–110). The world economy had been expanding healthily in the mid-1980s, but when fears of the consequences of the 1987 stock market crash aborted the policy of tightening that central banks had begun, the expansion began to overheat. One key result was a spurt in demand, and rising prices, for Canada's commodity exports. In 1950 and again in 1970, such international conditions — albeit in more extreme form than they took in the late 1980s — had led Canada to abandon a pegged exchange rate and allow the currency to float upward. Although the opportunity was inadequately exploited in 1970, the intent had been to render rising inflation amenable to control by domestic policy. In the late 1980s, the exchange rate was already essentially freely floating, although subject to intervention to smooth day-to-day fluctuations, so the impact of international conditions on the Canadian economy showed up mainly in an appreciation of the currency and only secondarily in upward pressure on the domestic inflation rate. By the beginning of 1989, when the FTA came into force, the value of the Canadian dollar, which in 1985 had slipped briefly below US$0.70, was already close to US$0.85.

During 1989, domestic monetary tightening put further upward pressure on the currency as the Bank of Canada cautiously moved inflation reduction to the centre of policy. As that year progressed, the international economy began to slow and the Canadian economy with it. By year-end, some relaxation in monetary policy seemed called for, and with it perhaps an end to the dollar's appreciation as well. By mid-January 1990, the Bank's view, as enunciated by Governor Crow, was that "a modest easing in monetary conditions was judged to be appropriate" (1990, 34), and the Bank's purchases in the mid-January treasury bill auction were sufficient to bring about a decline of roughly one-quarter of a percentage point in the

Figure 15: ***Short- and Long-Term Interest Rates, Canada, 1976–2003***



Sources: Bank of Canada; authors' calculations.

Bank Rate.[5] Financial markets saw things differently — the fall in the Bank Rate was widely read as signalling a weakening of the Bank's commitment to price stability, and between mid-January and mid-February the exchange rate fell from about US$0.865 to US$0.830.

The Bank reacted to this loss of confidence, which was putting upward pressure on short-term interest rates, with a new bout of tightening. It pushed up overnight rates dramatically, prolonging and rendering more pronounced an inversion of the term structure of interest rates (see Figure 15) as investors and others came to expect that both a real slowdown and probably a fall in inflation were on the not-too-distant horizon.[6] The resulting higher short-term yields helped the dollar resume its appreciation, and although

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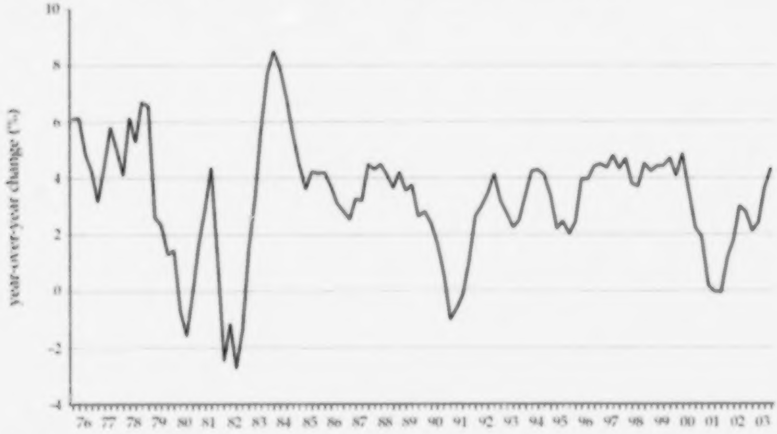
[5] At that time, the Bank Rate was set at 25 basis points above the average yield on three-month treasury bills at their weekly auction; the move to announcing a target for the overnight rate did not occur until 1996.

[6] Recall the discussion in Chapter 3 of the factors that can cause short- and long-term interest rates to move in opposite directions in response to a monetary policy initiative.

Figure 16: *Growth of Real GDP, United States, 1976–2003*



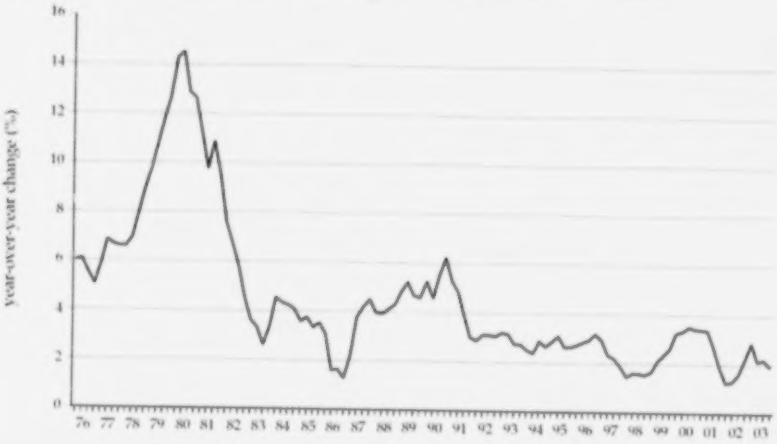
Source: United States, Department of Commerce, Bureau of Economic Analysis.

short-term rates began to ease by mid-1990, the exchange rate continued to rise, peaking at close to US$0.90 at the end of 1991. Meanwhile, the economy began to slip into a severe recession. Although this slump would not be quite as deep as that of the early 1980s, the economy's subsequent recovery was much slower, and the effects of the recession remained evident well into the middle of the decade.

The U.S. Boom of the 1990s

The United States also experienced a recession in the early 1990s, but the downturn south of the border was relatively mild and short lived. Real U.S. gross domestic product (GDP) began an expansion in the second quarter of 1991 that not only continued for the rest of the decade, but accelerated after 1995 (Figure 16) as labour productivity growth picked up and unemployment fell to ranges not seen since the 1960s. Furthermore, U.S. inflation remained low (Figure 17), despite widely held expectations to the contrary. Accompanying all of this was an appreciation of the U.S. dollar (Figure 18) as foreign investment flowed in to take advantage of the high

Figure 17: *Consumer Price Inflation, United States, 1976–2003*



Source: United States, Department of Commerce, Bureau of Economic Analysis.

returns that seemed to be uniquely available in the United States.

The 1990s were the decade of what some in the United States called "the new economy," when technological changes, largely associated with computing and communications, appeared to be yielding spectacular productivity gains. Some enthusiastic commentators claimed that the changes of the 1990s had rendered past experience completely unreliable as a guide to the economy's current and likely future behaviour, a view shared widely enough to support a spectacular surge in equity prices, especially those of firms associated with this new economy. No student of economic and financial history should have been much surprised when the

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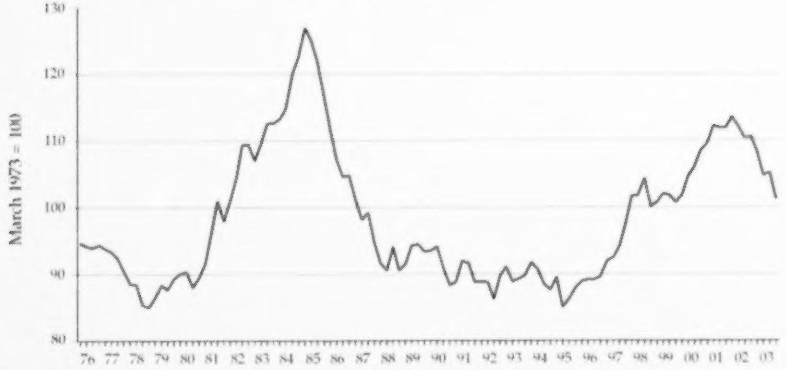
7 Some classic features of bubbles were evident in this experience. Buyers and sellers of electronic transmission capacity (bandwidth) rode a tulip-craze-like roller coaster. The growth of defined benefit pension funds whose performance was material to the corporate bottom line, and which held shares of other companies similarly exposed to pension fund performance, injected a pyramid-like element to the market reminiscent of the mutual funds bubble of the 1920s. The inevitable equities market collapse exposed a myriad questionable accounting and trading practices that drove many firms under and seem likely to send at least some senior executives to jail. To cap it off, revisions to official...

Figure 18: ***Real Effective Exchange Rate of the U.S. Dollar, 1976–2003***



Source: United States, Federal Reserve System.

bubble in equity prices burst and the boom ended.[7] Nevertheless, the U.S. economy overall performed better in the 1990s than it had in any decade since the 1960s. Even after taking into account data revisions that significantly reduced initial estimates, productivity growth was higher and unemployment and inflation lower in the 1990s than in the previous two decades. In many respects, moreover, the recession of 2001 was relatively mild — perceptions to the contrary being largely shaped by the apparently cataclysmic collapse of the same computing and communications firms whose earlier rise had created so much excitement.

The United States' economic performance affected both Canada's real economy and debates about Canadian economic policy. On the real side, the strong U.S. economy promoted further expansion of Canada's foreign trade. Exports and imports grew at respective annual average rates of 9.5 percent and 7.8 percent in real terms

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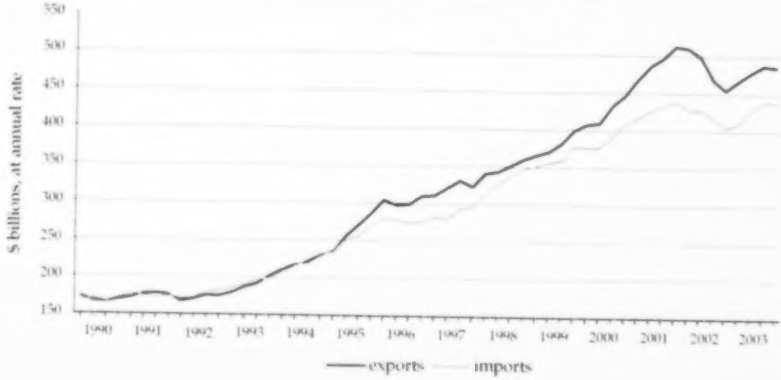
Note 7 - cont'd.

...data show in retrospect that much of the apparent acceleration in U.S. productivity growth in the last two years of the boom actually arose from measurement error.

Figure 19: *Goods and Services Trade, Canada, 1990–2003*



Source: Statistics Canada, CANSIM database, table 228-0001.

between 1990 and 2000, and Canada's trade balance showed large and growing surpluses (Figure 19). Although Canada, like the United States, enjoyed better economic performance in the 1990s than it had in the 1970s and 1980s — all the more so in the second half of the decade — many Canadian commentators noted that the country systematically lagged on several key economic indicators.

Over the decade, inflation in Canada was a little lower than in the United States — but output and productivity growth tended to be slower, too, and unemployment to be higher. At the same time, the Canadian dollar was among the many currencies against which the U.S. dollar appreciated. In the case of productivity growth, comparisons with the United States were influenced by measurement errors that initially overstated U.S. growth and understated Canada's performance. Nevertheless, these facts and perceptions prompted some to suggest that the Bank of Canada's low-inflation policies were contributing to Canada's inferior real performance and that Canada's floating exchange rate regime was an obstacle to better performance (see Courchene and Harris 1999; Grubel 1999). Even after the U.S. dollar's sharp depreciation in 2003, which shifted the Canadian exchange rate back into the US$0.75 range, these ideas continued to play a role in Canadian debates.

International Financial Upheavals in the 1990s

Notwithstanding the increased exposure to U.S. developments that the combination of freer trade under the FTA and NAFTA and strong U.S. growth brought about, shocks originating elsewhere in the world also affected Canada's economy and financial markets in important ways during the 1990s and early 2000s.

It has been a constant feature of the world economy since the postwar Bretton Woods system of pegged exchange rates collapsed in the early 1970s — and more particularly since U.S. inflation stabilized in the early 1980s — that economic uncertainty elsewhere in the world provokes movements of funds to the U.S. dollar, occasionally on a scale and speed that justify the phrase "flight to quality." Canada does not enjoy the safe-haven status that goes with being the emitter of the predominant international currency, so investors fleeing to quality do not seek it in Canadian-dollar-denominated assets. Accordingly, a regular by-product of these movements has been downward pressure on the Canadian-U.S. dollar exchange rate. Although the intensity of this effect diminished as the decade progressed, the 1990s saw a succession of financial upheavals outside North America, each of which affected the exchange rate of the Canadian dollar.

The first of these events was the 1992 crisis in the European Monetary System (EMS), whose impact on Canada coincided with a period of domestic constitutional uncertainty associated with the failed Charlottetown Accord. The major members of what is now the European Union were committed to a system of exchange rates fluctuating in narrow (plus or minus 2.5 percent) bands at the time, and these came under severe pressure. Capital inflows to Germany following reunification, combined with the Bundesbank's low-inflation poli-

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[8] This is a particular illustration of the general point made above — that a fixed exchange rate makes domestic monetary conditions a function of crossborder flows of funds.

cy, were pushing up the deutschemark, obliging other EMS countries to run tighter monetary policy than they would otherwise have wished in order to maintain the fixed rate.[8] Britain, which had entered the EMS two years earlier with what proved to be an overvalued currency, came under particular pressure; so did Italy, where domestic inflation was especially high. In September 1992, both left the system, producing sharp interest rate rises in other EMS countries. A further round of exchange rate realignments among European countries, both inside and outside the EMS, ensued and, in July 1993, overwhelming pressure against the French franc forced a widening of the intervention bands within the system to 15 percent each way.

The second shock was Mexico's "Tequila crisis," which began in 1994, the year before Canada's federal government took decisive steps to bring its fiscal stance under control. At that time, Mexico was trying to hold a fixed exchange rate against the U.S. dollar while experiencing an economic boom and relatively high inflation in the wake of NAFTA's coming into force. These pressures led to a 15 percent devaluation of the peso in December 1994 and then, after the fixed rate has been abandoned, a further sharp fall in its value. Canada and several European countries whose currencies had recently fallen came under new pressure as investors fled to U.S.-dollar-denominated assets. For Canada, this flight was intensified by the separatist Quebec government's June 1995 announcement that it would hold a referendum on independence. The resulting selloff of Canadian-dollar-denominated assets drove long-term interest rates up and the exchange rate down.[9]

A third wave of financial market crises followed in 1997. By this time, Canada's fiscal situation was on the mend and constitutional issues were attracting less attention. This domestic improvement was, however, temporarily overshadowed by upheavals that began with a series of currency devaluations — first in Thailand at the beginning of July, followed by others of varying intensity and magnitude in the Philippines, Malaysia, Indonesia, and South Korea, and by severe pressure on the exchange rates of the Singapore and Hong Kong dollars. The explosion of the domestic value of foreign-currency-denominated debt in the countries that devalued crippled many of their banks, while the tight monetary policy implemented to forestall further exchange rate declines put the economies of devaluers and nondevaluers alike into recession. Hardship in these newly industrializing economies, with their above-average intensity of industrial materials use, had a disproportionate effect on commodity prices, putting new downward pressure on the Canadian dollar. Even as the Asian crisis dragged on into 1998, a new period of instability began with the Russian government's default on substantial overseas debts in August 1998. This event helped trigger the near-collapse of the Long-Term Capital Management hedge fund and another flight to U.S. treasury securities.

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[9] For a short account of this crisis and the Bank of Canada's response, see Kennedy (2003).

Then, in 1999, Brazil, which had been under substantial pressure since the onset of the Asian crisis, abandoned its "crawling peg" exchange rate arrangement and saw its now-floating currency depreciate significantly. Its neighbour Argentina, which had adopted a currency-board-like arrangement to underpin a fixed exchange rate between its currency and the U.S. dollar, came under severe deflationary pressure, moved to a dual exchange rate system at the end of 2001, and abandoned the arrangement altogether in January 2002, precipitating a major domestic banking crisis and a fresh round of international concern.[10]

A final set of shocks began when the high-tech bubble burst in 2000, and just as it was becoming clear that this had coincided with the onset of a mild economic slowdown centred in the United

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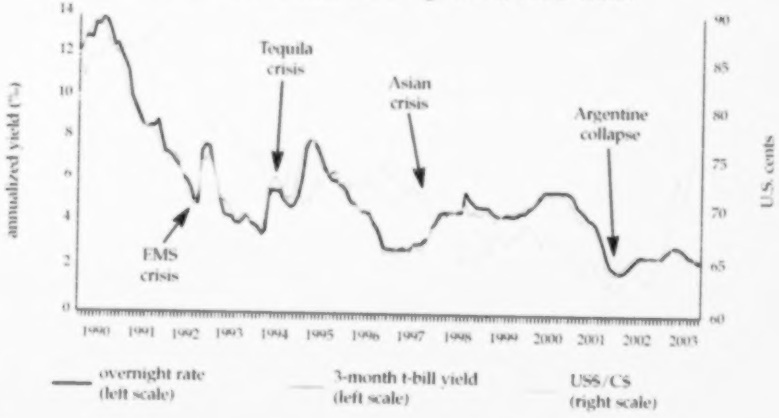
[10] A currency board underpins a fixed exchange rate by forbidding the monetary authority to issue domestic currency in amounts greater than its holdings of foreign currency, valued at the official rate — an arrangement whose potential applicability to Canada we discuss in Chapter 8. The Argentine arrangement was not as strict as that, and the ability of its central bank to monetize domestic government debt as well as foreign currency helped undermine the system.

Figure 20: *Short-Term Interest Rates and the Canadian-U.S. Dollar Exchange Rate, 1990–2003*



Source: Bank of Canada.

States, the September 2001 terrorist attacks triggered a fresh round of financial turbulence.

The effects of all these crises on the Canadian-U.S. dollar exchange rate can be seen in Figure 20, which shows monthly averages of the exchange rate and two key short-term interest rates — the overnight rate and the three-month treasury bill rate — since 1990. The first three of these episodes — the EMS, Tequila, and Asian crises — were associated with downward pressure on the exchange rate, which, in turn, provoked an upward move in short-term interest rates, including the most policy-sensitive overnight rate. These effects tended, however, to be more pronounced in the first part of the decade, with 1995 marking something of a breaking point. During the Tequila crisis, the Bank of Canada's response to the exchange rate's decline was sufficiently robust and prolonged to provoke a marked slowdown in the domestic economy. After that, although the Bank did not systematically ignore the exchange rate — see for

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11 See Murray, Zelmer, and Antia (2000) for commentary from within the Bank on the effects of these events on the exchange rate and the reaction of monetary policy.

example, its response to the upheavals associated with Russia's default in late 1998 — it seemed to become increasingly willing and, indeed, able to tolerate pressure on the exchange rate without resorting to domestic contraction.[11]

Canada's Recession and Recovery after the early 1990s

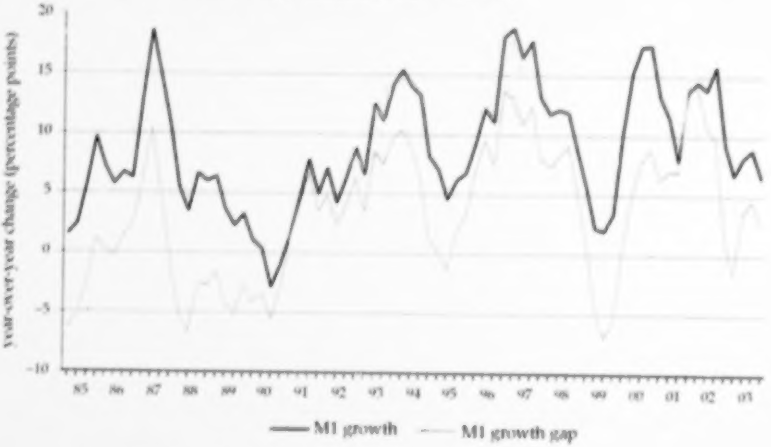
The story of Canada's domestic monetary policy under inflation targeting began in February 1991 with the economy already in a recession from which recovery was to be painfully slow, particularly during the 1991–93 period, when policy reacted to the EMS crisis. Then, in 1995, just as real expansion seemed to be picking up steam, there was a setback related to the Tequila crisis. After that point, Canada's economic performance became steadily more satisfactory, with only a mild hesitation in 1999 after the Russian default and a shallow and short-lived downturn at the turn of the century.

Running alongside this story was an interrelated one about fiscal policy. Here, too, the 1990s began on a discomfiting note, with high and rising deficit and debt levels that would persist into the middle of the decade. In 1995, however, a particularly tough federal budget put fiscal policy onto a new time path, and 1997 saw the first of a series of federal surpluses that is still unbroken as we write. With important differences across particular jurisdictions, overall provincial finances were also brought under control in the second half of the decade (as was illustrated in Figure 5, in Chapter 1).

Disinflation, Re-entry, and Responses to International Financial Turbulence

The severe additional tightening of monetary policy that came in early 1990 is evident from Figure 21, which shows both the year-over-year growth rate of M1 and the "M1 growth gap" — the difference between the growth of M1 and the growth of nominal GDP — over the 1985–2003 period. Although the economy was already

Figure 21: ***M1 Growth and the M1 Growth Gap, Canada, 1985–2003***



Sources: Bank of Canada; Statistics Canada, CANSIM database, tables 176-0025 and 380-0002; authors' calculations.

in recession in early 1991, the effects of the tightening on inflation, as conventionally measured by the year-over-year percentage change in the consumer price index (CPI), were initially masked by the once-and-for-all upward boost given to the CPI by the introduction of the goods and services tax (GST) in January of that year, and came through more clearly in the broader price index for GDP, which was less affected by the tax change (Figure 22).

The targets for inflation reduction set in 1991 called for a range of 2-to-4 percent to be achieved by the end of 1992 and for a further percentage point fall by the end of 1995, after which inflation would be held under 2 percent. Even in 1991, however, there was already enough disinflationary pressure in the system to ensure that the 1995 target was achieved a full four years early, by the beginning of 1992.[12]

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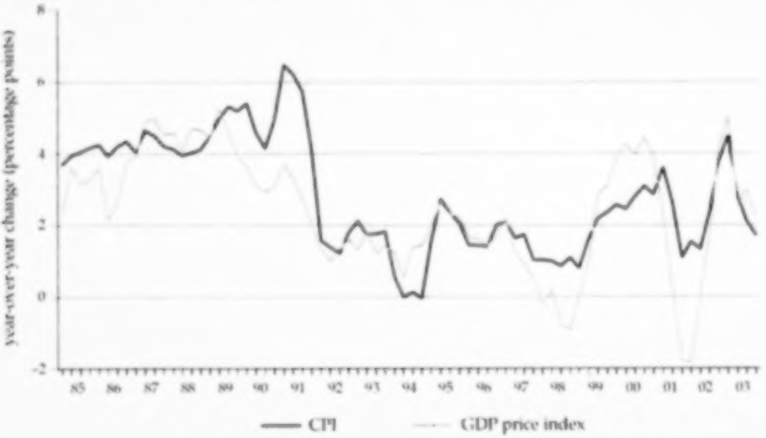
[12] This judgment is not just made with hindsight — the issue was raised by Laidler (1991) and Robson (1991).

Figure 22: *CPI and GDP Inflation, Canada, 1985–2003*



Source: Statistics Canada, CANSIM database, tables 326-0001 and 380-0002.

This rapid fall in inflation, associated with a deep recession, posed a number of problems for monetary policy. It seemed to suggest the need for immediate monetary easing, but two factors made such a response difficult. To begin with, there was the general question of the uncertain strength and delays in the translation of monetary policy actions into inflation outcomes. Perhaps, starting in 1992, an all-seeing central bank could have engineered a step-up in inflation from 2 to 3 percent over the following year, followed by a steady return to 2 percent over the following two years. But to carry out such a task in practice would have required policy fine tuning that was quite beyond the capacity of the Bank of Canada or, indeed, of any real-world central bank. Moreover, important questions about the credibility of the new policy regime had also to be faced. A gentle and, with hindsight, fully justified attempt to ease policy in early 1990 had misled markets into believing that the Bank was losing its zeal for price stability and triggered a plunge in the exchange rate. To have aimed policy at increasing the inflation rate in early 1992, only a year after the introduction of inflation targets and at a time when the fiscal situation was still deteriorating, would have jeopardized the new regime's credibility and risked another run on the currency, which, in turn, might have provoked yet another monetary tightening.

So the Bank of Canada proceeded with extreme caution. While short-term interest rates began to decline in 1990 and the exchange rate did so in late 1991, money growth remained subdued. Indeed, monetary policy remained tighter at that time than mere inspection of M1 growth or, indeed, of the M1 gap would suggest.

During any period of falling inflation, the public's demand for money tends to rise, for reasons that are easy to describe, but difficult to respond to — a conundrum sometimes termed a *re-entry problem*. Demand for money — particularly for transactions money, which bears little or no interest — depends not only on the price level and real income, which figure in our calculation of the M1 gap, but also on the rates of interest available on other assets, which do not. When these rates of interest fall, transactions money becomes cheaper to hold, and households and businesses tend to build up their stocks of it. Since falling inflation leads to falling nominal interest rates, both because of falling inflation expectations and because the central bank moves its policy rate down, it also leads to a rising demand for transactions money. Ideally, the central bank should accommodate this rise in demand by fostering more rapid growth in the stock of transactions money than consideration of contemporary movements in real income and prices alone would justify, but without generating fears that its commitment to keeping inflation down is weakening.

This trick is easier to describe in principle than to bring off in practice. The Bank of Canada did not attempt it in 1992, erring on the tight side even in the first half of the year, with the consequences illustrated in Figure 22. The Bank's problems that year were compounded by the international financial turbulence associated with the EMS crisis, which came to a head in the late summer and steepened the Canadian dollar's decline on foreign exchange markets. It responded by moving short-term interest rates sharply upward. Money growth slowed relative to the already sluggish pace it had achieved in the first half of the year — when, in fact, the economy's re-entry to low inflation required *faster* money growth. Not surprisingly, spending and output recovered only tentatively through 1992 and well into 1993, and the economy continued to run below its stable inflation level of output. Only in 1993, after a newly elected government and newly appointed Bank governor had agreed to an extension of the 2 percent inflation target, did interest rates return to pre-EMS-crisis levels and the dollar's plunge become less precipitous. Money growth picked up, lifting the M1 stock to a level consistent with the needs of a low-inflation, low-interest-rate economy, and the M1 gap began indicating easier policy.

By early 1994, the Canadian economy finally seemed set to resume real expansion and the generation of new jobs at a respectable rate, without any resurgence in inflation. International financial turbulence intervened yet again, however — this time in the shape of the Tequila crisis. Again, the Canadian exchange rate and short-term market interest rates came under pressure, and again the Bank of Canada responded by increasing its policy rate. M1 growth sagged and, with the M1 gap signalling tightness, a sharp slowdown in spending and output ensued.

By the end of 1995, inflation had been in the lower end of its target range for four years. Notwithstanding the fact that 12 months of very low CPI readings had owed something to a cut in tobacco excise taxes implemented to curb smuggling, the targeting regime had gained credibility from this experience and from its renewal in 1993 by a government other than the one that had first implemented it. Even so, the Canadian economy's overall performance still left much to be desired, and fiscal concerns continued to create doubts about the inflation-targeting regime's longer-term viability — as was virtually bound to be the case, since the regime was underpinned by an agreement between the Bank of Canada and a deficit-beleaguered minister of finance.

Fiscal Crisis and Consolidation

Since the mid-1970s, federal budget deficits had been large enough to increase the ratio of federal debt to GDP almost constantly. The recession and slow recovery of the early 1990s gave another sharp upward twist to debt and deficits, pushing tax revenue down and income-support payments up. It also pushed up interest costs, which became an increasingly important phenomenon as the size of the debt grew.

For those concerned that the unsustainable growth of federal debt might some day lead to monetization, the virtual electoral annihilation of the federal Progressive Conservative government in December 1993 by a Liberal party under Jean Chrétien that had consistently opposed its attempts at fiscal consolidation was hardly encouraging. Not only was John Crow's term as governor of the Bank of Canada due to end shortly after the election — a problematic circumstance given the personalized controversy surrounding monetary policy — but the Liberal platform pledged, among other things, to abolish the GST, a tax that then supplied some one-seventh of the federal government's revenue, and to initiate a major renegotiation of NAFTA.

In the event, however, the Liberals took no action, beyond some cosmetic discussions, on either of these pledges. Rather, the appointment of Gordon Thiessen as governor of the Bank of Canada — accompanied by an announcement that the inflation-targeting regime was to be kept in place until 1998, albeit with its post-1995 configuration somewhat softened — constituted the first of a series of surprises indicating that the new government was slowly but surely coming to grips with Canada's macroeconomic problems.[13]

The most dramatic policy reversal — which had not been foreshadowed in any election promises — occurred on the fiscal front. The new Liberal government's first budget, that of 1994, was widely seen as inadequate in the face of the mounting federal debt, and provided the domestic background for the late 1994 tightening of monetary policy that we have already discussed. As 1994 progressed, continuing financial turbulence and renewed pressure on interest rates and the exchange rate began to convince a sufficient share of the population — and the Liberal caucus — that the country's fiscal problems had to be addressed. The result was a federal budget, in spring 1995, that proved a turning point in creating a secure macroeconomic environment for Canada for the second half of the 1990s. That budget established goals for sustained deficit reduction over the following three years that were to be achieved by cuts in spending larger in percentage terms than any since the end of the Korean War in 1953; in the event, they were actually achieved ahead of time.

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[13] The reader is reminded that the Bank's initial goal of an inflation rate of "clearly below 2 percent" after 1995 was abandoned, pending further study, and that the target range of 1 to 3 percent would remain operative until the present.

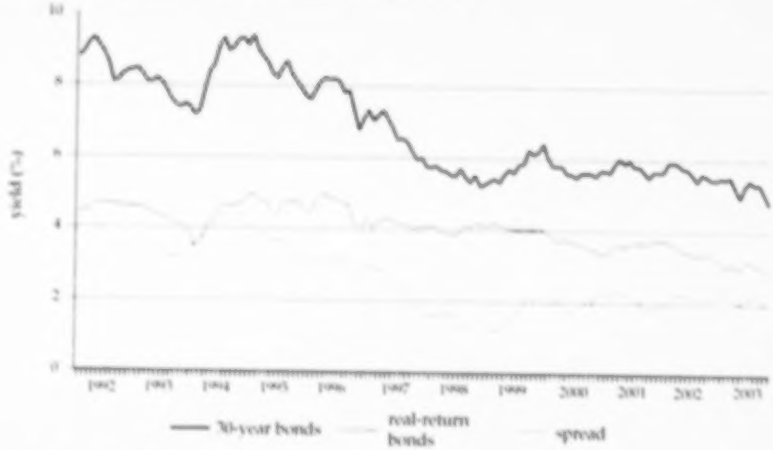
Before 1995, the prospect that high deficits and rising debt would persist indefinitely had worked against the inflation-targeting regime's long-term credibility and — by imparting an upward bias to inflation expectations — had put upward pressure on interest rates and downward pressure on the exchange rate. These effects, in turn, had provided some justification for the Bank of Canada's erring almost continuously on the tight side in order to keep inflation always well below the top, and sometimes below the bottom, of the target range. After 1995, the fiscal threat began to recede, inflation expectations became more firmly anchored, and the Bank was able to take a more symmetric approach to the risks inherent in its policy actions.

Return to Growth

These effects did not come through overnight, but in time they brought about a profound change in Canada's macroeconomic environment.

The longstanding premium of Canadian over U.S. long-term interest rates, which had persisted even after inflation in Canada had fallen below that in the United States, disappeared after 1995 (as we showed in Figure 7, in Chapter 1). The gap in yields between regular and real-return bonds (Figure 23) moved to about 2 percent in the second half of the decade and, although movements in real-return bond yields can be erratic at times because of the small number of such bonds outstanding and the market's resulting tendency

Figure 23: ***Nominal and Real-Return Bond Yields, Canada, 1992–2003***



Source: Bank of Canada.

to be illiquid, the message implicit in this gap — that inflation expectations had moved close to 2 percent — is reinforced by survey evidence. The increased credibility of monetary policy, in turn, helped the fiscal situation. Lower nominal interest rates reduced the burden of servicing public debt. And, as fiscal consolidation mitigated the need to offset possible upward pressure from fiscally inspired inflation expectations on the actual inflation rate — a key source of contractionary bias in monetary policy — the economy began to operate closer to its stable inflation level of output, with beneficial consequences for both government expenditures and revenues.

In the second half of the 1990s, then, a virtuous circle set in motion by the fiscal consolidation and maintained by lower interest rates paid off in much improved overall economic performance.

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14 A considerable reduction in the generosity of unemployment insurance was implicit in the reforms (described in Nakamura 1996) of what was renamed *employment insurance* in 1996, as Fortin (2000) has shown. Note that some elements of these changes, largely affecting the system's generosity to seasonal workers, were rescinded in 1998.

Spending and output picked up, and the unemployment rate fell to levels not seen since the 1970s.[14]

Further specific evidence of this virtuous circle's effects is available in the responses of the economy and the Bank of Canada to the Asian and Russian crises of 1997–98. As in earlier episodes, international financial turbulence put downward pressure on the exchange rate. In this instance, however, fears that domestic inflation would pick up as a result, and that monetary policy would become too accommodating, were much less acute, and the Bank's policy response was correspondingly muted. The extraordinary growth rate of M1 and the gap between M1 growth and growth of nominal spending (the M1 growth gap illustrated in Figure 21 above) suggest that policy was strongly expansionary in 1997. The upward movements in interest rates of the second half of that year, then, were quite justifiable in purely domestic terms, while their upward spike in late summer 1998 — clearly a policy response to the exchange rate's rapid depreciation — was quickly undone. Against this backdrop, it is not surprising that the economy's slowdown in 1999 was a gentler affair than that of 1995 had been.[15]

Inflation targets were renewed with little fanfare in 1998. The incentives inherent in the inflation-targeting regime for the Bank of Canada to look ahead to the medium-term consequences of policy, rather than backwards or sideways at the recent and current behaviour of the exchange rate or other financial market indicators, were evidently stronger in 1997–98 than they had been only two years earlier. And those incentives seem to have had a similar effect on the Bank's response to the mild U.S. recession of 2001 that came with the bursting of the high-tech bubble. This involved an immediate and vigorous easing of policy that, to the surprise of many commentators, enabled the Canadian economy to avoid actual recession, although not a temporary slowdown in the rate of expansion.

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[15] The monetary policy responses of Australia, Canada, and New Zealand to the events of 1997–98 provide an interesting and instructive study in contrasts. All three countries saw their currencies depreciate sharply and then recover somewhat. Australia rode out the turbulence without increasing domestic interest rates, and suffered no domestic slowdown; Canada raised rates sharply, but quickly lowered them again, and experienced a temporary reduction in its growth rate; New Zealand raised rates and kept them up, provoking a domestic recession. For more on this episode, see Djoudad et al. (2001).

The Early 2000s

The Canadian economy entered the new millennium on a high, growing so vigorously — and consistently outpacing that of the United States for long enough — that then-Finance Minister John Manley's use of the phrase "northern tiger" did not seem ludicrously hyperbolic. The passage of more time, however, has revealed that the rapid growth in output and employment that inspired the term had a strong cyclical element to it. The rebound from the softness of 2001 flagged in 2003, even as U.S. output (although not employment) was recovering strongly.

Inflation in Canada also went through a pronounced cycle in the 2000–03 period. A drop in headline inflation as measured by the CPI in late 2001 and 2002 temporarily interrupted a generally rising trend after 1999. By late 2002, inflation — as measured both by the total CPI and by the "core" price index (which abstracts from the effects of particularly volatile prices; see Chapter 6) — was above 3 percent. The sources and significance of this rise were, and remain, matters of some controversy. Some commentators urged the Bank of Canada to ignore it, since it was the result of one-off price changes, most notably in the markets for energy and insurance (the latter being an important reason for the upward move in the core inflation rate). Others argued that the rise was symptomatic of a long-term trend in the average inflation rate that had begun in the late 1990s, reflecting an overheating economy and requiring the attention of monetary policy.

Whichever side was right, the Bank of Canada did indeed tighten its stance in early 2003 (as Figure 10, in Chapter 1, illustrates), at a time when measures of inflation expectations were beginning to creep up. The economy soon slowed, inflation fell quickly back into its target range, and monetary policy rapidly eased again. These effects on output and inflation came through sufficiently quickly to suggest that they might well have happened even in the absence of any temporary tightening of policy. Moreover, they coincided with a sharp and general depreciation of the U.S. dollar on foreign exchange markets, which, combined with the Bank's tightening, took the Canadian dollar back into a range around US$0.75 by fall 2003 — an appreciation of some 20 percent from a year earlier. As a result, by the beginning of 2004, the economy was suffering from the combined effects of temporary monetary tightening and the difficulties some exporters, particularly in manufacturing, were having coping with the combined effects of exchange rate appreciation and softness in demand for Canadian exports.

Even so, at the time of writing, the economy is continuing to expand, albeit at a modest pace, and the federal government's budget — though not those of the provinces, struggling ever harder to meet mounting health care costs — remained in surplus. If Canadians were nevertheless disappointed with the economic outcomes they experienced in 2003 and early 2004, much of their displeasure was surely the result of comparing them with what had seemed possible only a year earlier. This, as far as our story is concerned, is compelling evidence of just how much things had changed for the better since the early 1990s.

6 Adjustments to the Policy Framework

As we have seen, the story of monetary policy in the 1990s is one of slow but steady improvement in its conduct and outcome. So far, we have stressed the role of the macroeconomic environment in this process and, in particular, the way Canada's improving fiscal situation enabled the Bank of Canada to pay less attention to international disturbances in calibrating its policies as the decade progressed. Importantly, however, the Bank's conduct of policy also evolved over the period with respect to both its technical foundations and its institutional setting.

The Basic Framework

By the beginning of the 1990s, the mechanics whereby monetary policy affects inflation, at least in broad outline, were no longer controversial. They are most easily summarized in terms of three links, which among them take between one and two years to transmit changes in the Bank of Canada's monetary stance to the inflation rate.

The Transmission Mechanism

First, as we discussed in Chapter 3, the Bank of Canada's control of the supply of liquidity to the banking system and its ability to determine the overnight interest rate in the market for interbank funds allow it to affect the level of interest rates more generally in the economy and — an important complication in an open economy — exert pressure on the exchange rate, too. This stage in the process works quickly — in a matter of weeks, days, or even hours.

Second, as we also discussed, holding constant the influence of other factors — such as consumer and business confidence at home and demand for Canada's exports abroad — that affect the demand for goods and services, a more relaxed monetary policy leads to an increase in the rates of growth of bank lending and the money supply and, hence, aggregate demand, and a tighter policy to a fall in these indicators. These effects can be slow to materialize, taking anything from six to eighteen months to be noticeable.

Finally, inflation's long-term trend is driven in the first instance by expectations of its future course that are built into firms' pricing decisions and into wage contracts, but it is also subject to modification by the pressure of aggregate demand on aggregate supply. When the economy operates above its stable inflation levels of output and employment — that is, when the output gap is positive — inflation rises relative to its expected rate. When the economy operates below its stable inflation level — that is, when the output gap is negative — inflation falls relative to that rate. Between one and two years can elapse after a policy change before this modifying effect of demand on inflation comes through.

The Bank of Canada's policy formation process, in the context of its explicit inflation target, follows naturally from this framework. Policymakers first must set a target for the inflation rate — not for the immediate situation, but for one or two years into the future. Then, they must estimate both what the actual rate of inflation will be at that time and what the state of the public's expectations of inflation are likely to be. The next step is to decide what value of the output gap in the interim will move inflation from its forecast value toward the target level. Finally, having estimated the future trajectory of aggregate supply, policymakers must figure out what overnight rate setting will generate the interest rate structure, money and credit growth, and exchange rate needed to produce the appropriate level of demand in the economy.[1]

As this account hints, a process that is simple in principle is fraught with difficulties in practice. It is no easy task, for example, to assess what the state of inflation expectations or the Canadian economy's level of productive capacity are likely to be a year or eighteen months into the future, or what is likely to be happening to the myriad factors other than monetary policy that affect demand. These uncertainties presents a number of problems for the design of any inflation targeting regime, and the Bank of Canada's response to them evolved over the 1990s.

The Design of Inflation Targets

Any reasonable operational inflation target must reflect the fact that monetary policy is an imprecise business, but the importance of inflation expectations as an influence on actual inflation and the need to hold policymakers accountable make anything more than a rather narrow margin of imprecision in its formulation undesirable. Moreover, the fundamental importance of clear communication with the public also requires that the target be stated in terms of an inflation measure the public understands.

In Canada, as in most other inflation-targeting countries, the latter need dictated stating the inflation targets in terms of the consumer price index (CPI). The CPI is measured monthly and reported promptly. It does not get revised, it is widely publicized, and it is generally accepted and used for many private sector and government purposes as a meaningful measure of changes in the "cost of living." A strong economic case exists for using a price index based on gross domestic product (GDP), which would encompass the prices of all the goods and services produced in Canada, but such an index has a number of drawbacks: it is harder to measure, can be highly sensitive to variations in commodity prices and Canada's terms of trade, appears with a long time lag, is subject to revisions, and is not well understood by the general public. The need for a transparent and credible policy regime was decisive in the choice of the CPI as the target index in 1991, and the fact that it has not been changed since then speaks to the wisdom of that choice.

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[1] Bank of Canada staff have published a number of papers over the years describing the Bank's approach to formulating policy; see, for example, Duguay and Poloz (1994); Duguay and Longworth (1998); and Macklem (2002).

Stating the inflation targets in terms of a range, rather than a precise figure, has been another unchanging feature of the regime. The Bank of Canada's estimates of its ability to control CPI inflation before the regime was put in place suggested that a range of one percentage point on either side of the target was too narrow to promise consistent success.[2] Recognizing that establishing a range broad enough to guarantee success according to its models would inspire little confidence, however, the Bank committed itself to the narrower band. Although the CPI remained outside the the target range for a significant amount of time in the early years (as Figure 11, in Chapter 1, showed), this experience did not undermine the credibility of the regime, likely because fears about its durability focused far more on the prospect of higher, not lower, inflation. Moreover (again as Figure 11 showed), the Bank's record in hitting the target improved after 1994: from February 1995 through to the end of 2000, the CPI's year-over-year increase was inside the target range for 61 of 71 months, or 86 percent of the time.

A subtle question that troubled some observers of inflation targeting in the early years was the status of the boundaries of the target range relative to its central value.[3] The Bank of Canada's first three statements outlining the inflation-targeting regime (Bank of Canada 1991, 1993-94, 1998b), and particularly the latter two, had an ambiguous element. Did they mean that inflation was supposed to be kept anywhere within the 1-to-3 percent range? Or was there a 2 percent target around which a plus or minus one percentage point margin of error was permitted? This issue was finally resolved when new targets were set in 2001 for the following five years. Although the target range stayed at 1-to-3 percent, an explanatory document (Bank of Canada 2001) accompanying the announcement made clear that policy was aiming at an inflation rate of 2 percent, that the Bank would tend to tighten its stance when inflation looked likely to move above this level (even if it did not also look likely to exceed 3 percent), and that the Bank would ease if inflation looked likely to fall below 2 percent (even if not below 1 percent).

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[2] Crawford (2001b, 15) reports that work by Bank of Canada staff suggested that the Bank would be able to maintain CPI inflation inside such a band only two-thirds of the time.

[3] See Siklos (1997, especially 131-34) for a discussion of the issues involved here.

The Role of Core Inflation

The prices of some goods represented in the CPI, notably such foods as fresh vegetables and such energy products as gasoline, fluctuate a great deal thanks to the nature of the markets in which they trade. Changes in indirect taxes, mainly the goods and services tax, provincial retail sales taxes, and excise taxes, also directly affect the CPI. These facts imply that inflation, as measured by changes in the CPI, can fluctuate on a month-by-month basis for reasons that have nothing to do with monetary policy, and hence can send signals to the Bank of Canada and to outside observers that are irrelevant to its conduct. The Bank addressed this problem by creating and computing its own price index, from which (initially) the influence of food and energy and (later) indirect taxes were stripped.

Inflation as measured by changes in this stripped-down CPI, termed *core inflation*, has become the key indicator by which the Bank frames its policies. From the beginning, the Bank has treated monthly movements in this core index, which it modified in 2001, as a more reliable indicator of the longer-term average rate of CPI inflation that its policies are generating than monthly movement in the CPI itself. Although this approach has merit, it is not without problems.

First, the focus on core inflation makes most sense if, in the long run, food and energy prices rise at the same rate as do other prices — if, in other words, their shorter-term fluctuations obscure underlying trends when they occur, and cancel out over time. This does indeed usually seem to be the case. When it is not, however, difficulties can arise in interpreting the message core inflation conveys.[4] In 1999 and 2000, for example, world oil prices systematically rose faster than prices in general; in Canada, this was reflected in a CPI inflation rate that moved into the top end of its target range for an uncomfortable period and even strayed above its upper bound for a while, even while core inflation signalled no problems (Figure 24).

Second, and closely related, the Bank of Canada until quite recently had difficulty making clear to the public just what the role of core inflation was within its policy framework. Many media commentators and participants in financial markets came to write and act as if the Bank's target was actually core inflation rather than overall CPI inflation, even though the Bank had never said this. Indeed, a target for core inflation would be much less satisfactory, if only because the overall cost of living is what matters to the Canadian interested in what his or her salary and savings will cover and trying to make sense of individual prices at which he or she may buy or sell. If total CPI inflation had run above target for much longer than it actually did in 1999 and 2000, for example, and the Bank had claimed to be still hitting its target on the basis of another, somewhat esoteric, price index, the credibility of the targeting regime itself would surely have come under stress.

When the Bank announced the extension of inflation targets in 2001, it took some pains to clarify the subordinate role of core inflation in its policy framework, and simultaneously adopted a new core inflation measure that stripped fewer goods from the CPI.[5]

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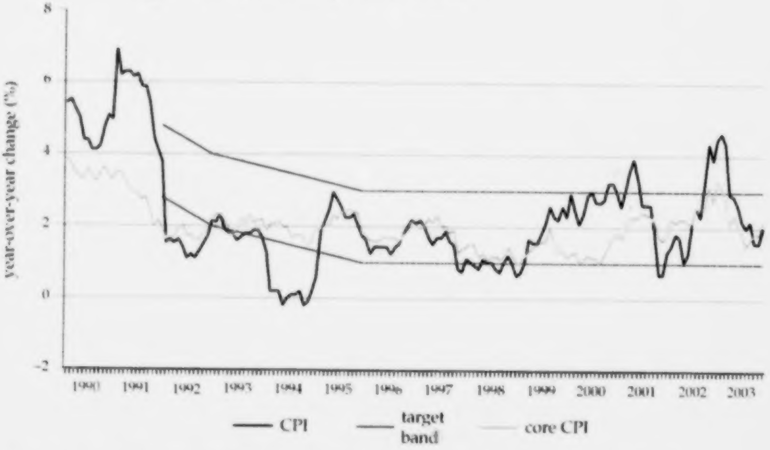
[4] See Laidler and Aba (2000) for a discussion of the problems created for the core inflation rate during periods when relative energy prices are changing, and Macklem (2001) for a rebuttal of their arguments, formulated in the context of the core inflation rate's longer-term properties as a leading indicator of actual inflation.

[5] The new core measure is the one illustrated in Figure 24. The details of the differences between the old and new core indexes are described in Macklem (2001). The old core index is still published by the Bank of Canada under the label "CPI excluding food and energy and indirect taxes."

Figure 24: ***Total and Core CPI Inflation and the Target Band, Canada, 1990–2003***



Sources: Bank of Canada; Statistics Canada, CANSIM database, table 326-0001.

Monetary policy watchers immediately accepted this new measure of core inflation, and its configuration seems to have reduced the chances of any long-term divergence between inflation as measured by the two indexes.

The Development of the Bank of Canada's Operating Procedures

The developments that took place in the actual implementation of policy in the 1990s were significant and of considerable technical interest. Indeed, by the end of the decade, they left Canada with operating procedures that are very much in the spirit of the "Taylor rules" discussed earlier and that one commentator has termed "state of the art" (Woodford 2003, 24–31).

The Rise and Fall of the Monetary Conditions Index

To begin with the calibration of policy, the 1990s saw significant changes in the Bank of Canada's attitude toward and use of the monetary conditions index (MCI). As we explained in Chapter 3, the MCI summarizes the weighted influence of changes in short-term interest rates and the exchange rate on aggregate demand. While unobjectionable in theory, the MCI turned out to be hard to use in practice. The difficulties stemmed from the distinction between desired and actual movements in the index, both as it affected policy decisions and as it impinged on the Bank's ability to communicate the intentions underlying those decisions to the markets.

The actual weights in the MCI derived from econometric work suggesting that a one percentage point move in short-term interest rates, holding constant all factors that might influence the "neutral" value of the index, had the same effect on aggregate demand as an exogenous 3 percent move in the exchange rate.[6] On its face, this weighting appears to suggest that, if the exchange rate fell by, say, 3 percent and the Bank wished to see short-term interest rates at a level that would hold overall monetary conditions constant at a neutral setting, it should engineer a one percentage point increase in short-term interest rates. Whether such a response makes sense, however, depends crucially on whether the level of interest rates consistent with a neutral setting moved as well, and whether the exchange rate move was indeed truly exogenous rather than an endogenous response to an actual or incipient change in factors affecting the output gap.[7]

For example, one can conceive of financial market participants' wanting to change the Canadian dollar content of their portfolios for reasons unrelated to, say, conditions in world demand for Canada's exports or its attractiveness as a place for fixed investment. Investors might thus be less willing to hold Canadian dollars and, hence, the exchange rate would fall. Such a fall would, in turn, increase foreign demand for Canadian exports and tend to increase the domestic prices of imported goods. Both these effects would tend to move inflation up. Because such an event would change the actual level of the MCI but not its desired level, the Bank of Canada would appropriately increase interest rates to keep inflation stable.

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[6] Note that the difference in scales applied to the two variables raises questions about the applicability of an index weighted in this way when interest rates are far away from the values that prevailed during the period that provided the data for the econometric work.

[7] Freedman (2001) reviews these and other difficulties associated with the MCI.

One can also imagine, however, the exchange rate's moving down because markets for Canadian exports have weakened or for some other reason implying a change in the outlook for aggregate demand, the output gap, and inflation. In those cases, the actual and desired levels of the MCI would change together, and no domestic interest rate response would be required. Indeed, if, as is more than possible, these influences were also depressing domestic profit expectations, the resulting decline in the neutral rate of interest might actually argue for a cut in the Bank's policy rates.

In the real world, moreover, exchange rate movements occur for mixtures of reasons, some of which the Bank can reasonably treat as exogenous shocks, while others have implications for aggregate demand.[8] The Asian and Russian crises of 1997–98 provide key examples. The flight to quality that drove the Canadian dollar down was in no way a response to any change in Canada's economic situation, but the slowdown in economic activity in those parts of the world nevertheless meant less demand and lower prices for Canada's commodity exports. In principle, the portion of the dollar's decline attributable to the first channel was properly met with an increase in interest rates, but not that stemming from the second. No mechanical application of the MCI, however, could reveal how much of a change was actually called for in practice during this episode. The weakening of export markets depressed the desired level of the index by some unknown amount at the same time that the Canadian dollar's fall depressed its actual value.

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[8] Much of the analysis along these lines speaks of "portfolio shocks" to describe exchange rate movements unrelated to developments in the domestic economy. This terminology is unhelpful, however, since many portfolio adjustments have implications for aggregate demand and inflation. Changes in views about Canada's relative attractiveness as a place to invest, even if they arise only because investors have revised their views about the attractiveness of some alternative location, will likely result in more or less direct investment or more or less availability of investable funds on attractive terms for Canadian projects and, hence, in more or less pressure from capital investment on available resources.

During the 1990s, the MCI also complicated the Bank of Canada's communication of its policy intentions to financial market participants, who are naturally preoccupied with what the Bank's approach to interest-rate setting will be, not with what it should be. Experience early in the decade, when the Bank frequently responded to movements in the exchange rate with offsetting movements in interest rates that smoothed movements in the MCI, promoted a belief that the Bank would automatically act to stabilize the MCI by varying interest rates whenever the exchange rate varied, and some market participants saw the Bank's deviations from that course as akin to reneging on a commitment.

Confusion created by such expectations was particularly troublesome in summer 1998. The Bank was widely understood to have indicated, in its spring *Monetary Policy Report* (Bank of Canada 1998a), that it would hold monetary conditions as measured by the MCI stable over the succeeding six months. Under the influence of the gathering Asian crisis, however, the Bank allowed monetary conditions to ease as the exchange rate declined over the summer. The Bank eventually raised the overnight rate (albeit by a full percentage point) at the end of August, but even this measure, which it soon began to reverse, only temporarily interrupted the decline in the MCI. The Bank's statement of its intentions had, in fact, been carefully hedged. It had said in the spring *Report* that "it is the Bank's judgement that between now and the next *Report*, monetary conditions in the recent range would be broadly appropriate *in the absence of further shocks*" (p. 31, italics added), and further shocks did indeed occur. Even so, traders and investors were surprised and confused by the Bank's failure to stabilize the index when it initially began its decline. Whether or not the Bank's policy actions during the summer and autumn of 1998 were justifiable, the MCI clearly failed as a device for communicating with markets during this episode. Thereafter, the Bank began to de-emphasize it in its public statements.

The evolution of the Bank's use of the MCI in setting and communicating policy in the later 1990s reflected changing views about the significance of the exchange rate. Over the decade as a whole, the Bank appears to have moved from the view that, absent any information to the contrary, a given movement in the Canadian dollar should be treated as an exogenous shock requiring a policy response, to the view that, absent evidence to the contrary, a given movement should be treated as reflecting an automatic offset to the effects of changes in fundamentals on the level of demand in the economy and requiring no such response.

As Deputy Governor Sheryl Kennedy remarked in summer 2003:

> Clearly, exchange rate movements affect economic activity, and much useful information can be extracted from exchange rates. But we have learned that, to interpret this information correctly, we must understand the nature of the shock behind any persistent exchange rate movement, as different shocks have different policy implications. For example...the Asian crisis...triggered a drop in our currency. In the early days of that episode, this resulted in what we considered to be an overly loose monetary policy stance, given that our economy was approaching its capacity limits. The Bank tried to resist this downward movement in the dollar through a combination of intervention in the foreign exchange market and interest rate increases. Later, it became clear that the drop in the currency reflected mainly fundamental factors, that is, a sharp weakening of Canada's terms-of-trade brought on by falling commodity prices. This experience showed that, if the macroeconomic policy framework is right, monetary policy should be able to rely on the exchange rate to perform its role in helping to cushion the impact of economic shocks, such as falling commodity prices. We also learned that it is counterproductive to resist exchange rate movements that are driven by fundamentals. (Kennedy 2003.)

The Foreign Exchange Market

The *Bank of Canada Act* stipulates that the Bank is the government's agent in the foreign exchange market, and it never acts there without instructions from the Department of Finance. So long as a political commitment to a flexible exchange rate regime exists, however, the Bank can and does offer advice to the department about the form its instructions might take, and this advice usually seems to be taken. Thus, as the 1990s progressed, the changing interpretation of the dollar's movements to which Deputy Governor Kennedy refers above found expression in the Bank's foreign exchange market operations, and the Canadian dollar increasingly became a truly floating currency.

In the first part of the decade, the Bank intervened regularly in the market to smooth out short-term fluctuations. It usually justified these actions by referring to the thinness of private markets and the desirability of avoiding sharp jumps in the dollar's value that might arise from this alleged technical deficiency. In practice, however, the effectiveness such actions was questionable and their influence on market expectations unpredictable.

By the mid-1990s, for example, a routine procedure known as *symmetric intervention* was well established whereby the Bank would buy Canadian dollars whenever the currency fell by more than a given amount, and sell if it rose by an equal amount. This technique always had problematic aspects — traders who expect the Bank to intervene at a given level may stay out of the market when the currency is trading close to that level, producing a thinner and more volatile market. And, by mid-1998, the procedure appeared increasingly difficult to justify. When the dollar's external value began declining as the Asian crisis unfolded, the Bank bought the currency steadily, to no apparent avail. However, whenever a temporary reversal of the underlying trend took the exchange rate up, the Bank found itself selling Canadian dollars even as the exchange rate's overall downward trend continued to cause it concern. The Bank found it as hard to defend this policy as financial market participants did to understand it, and abandoned it in September 1998.

From then until the time of writing, while the Bank did intervene in support of the euro in September 2000, in cooperation with other central banks, it has not intervened in the foreign exchange market to influence the Canadian dollar's value.[9]

The Bank has nevertheless left open the possibility that it might intervene in the foreign exchange market for policy purposes. Indeed, since it acts as the federal government's agent in that market, it would have to intervene if its principal told it to do so. At this point, however, it seems that, since late 1998, the Bank has adopted the view that foreign exchange interventions are less necessary or less desirable or both.

The Overnight Rate and Regular Announcement Dates

Communications issues played an important part in the evolution of the Bank of Canada's operating procedures during the 1990s. At the beginning of the decade, the Bank was setting the Bank Rate — the interest rate it charges on overdrafts — weekly, at 25 basis points above the yield established for three-month treasury bills at the regular Thursday auction. This approach, in place since 1980, had replaced a previous system whereby the Bank made and announced changes to the Bank Rate at much less frequent intervals. It was intended as a market-based approach that would divert attention from the Bank Rate as an indicator of monetary policy to the underlying state of play in money markets. The market-based approach had not, however, fulfilled those hopes. The Bank's participation in the treasury bill auction did not give it absolutely precise control over the resulting yield and, as a result, every week saw some change in the Bank Rate. This change, even if trivially small, was nevertheless dutifully reported by media that had come to pay more, rather than less, attention to what they invariably referred to as the Bank of Canada's "trend-setting" interest rate.

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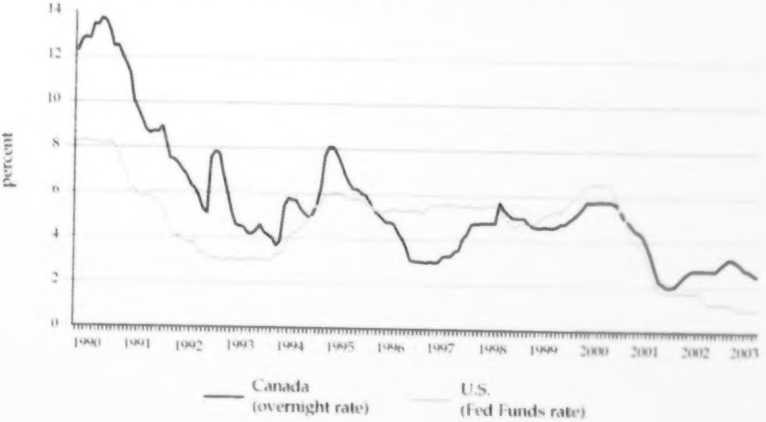
[9] A recently published *Backgrounder* (Bank of Canada 2003b) provides useful information on the procedures for foreign exchange market intervention currently in place. Intervention to affect the value of the dollar should be sharply separated from those purchases and sales of foreign currency the Bank undertakes from time to time, either to adjust the level of reserves it manages on behalf of the Department of Finance or simply to obtain the funds the federal government needs for foreign transactions.

In 1994, the Bank switched to periodically setting a 50 basis point target range for the overnight rate; in 1996, the top of this range became the Bank Rate. This method created scope for more nuanced variations in monetary policy. The Bank could engineer variations of the overnight rate within the range without undue media attention and, when it wished to signal a more substantial change in its stance, it could shift the whole target range up or down at a time of its choosing. This new procedure succeeded in reducing the attention paid to small variations in interest rates and in focusing it instead on genuine policy changes.

In time, however, another problem emerged. As we have seen, many important monetary policy actions during the 1990s were responses to international developments. Whether by coincidence or because changes in the U.S. Federal Reserve's target for its own key overnight interest rate, the Federal Funds rate, were a major part of those developments, several high-profile interest rate changes after about mid-1998 shortly followed similar moves by the Fed. As Figure 25 illustrates, Canadian and U.S. policy interest rates followed paths that, while resembling each other in responding to similar cyclical movements in the two national economies, deviated at many points in the 1990s. The pattern of Canadian adjustments shortly following similar moves by the Fed in the late 1990s, however, was prominent enough to create two effects.

First, to some observers, it appeared that the Bank was not so much pursuing an independent policy aimed at domestic goals as demonstrating the ultimate dependence of Canadian policy on that of the United States — a perception unhelpful to the credibility of the inflation-targeting regime. Second, and more immediately disruptive to Canadian financial markets, whenever the Fed did move, questions arose immediately about if and when the Bank of Canada would follow. The target for the Fed Funds rate, except in emergencies, has long been set by pre-scheduled meetings of the U.S.

Figure 25: ***One-Day Interest Rates, Canada and the United States, 1990–2003***



Sources: Bank of Canada; United States, Federal Reserve.

Federal Open Market Committee (FOMC), which convenes at roughly six-week intervals and which announces its decisions at about 2 p.m. on a Tuesday. Under the Bank's post-1996 operating procedures, any announced change in U.S. policy immediately prompted speculation and repricing in the money and foreign exchange markets as traders placed bets on how the Bank would react.

The resulting uncertainty, and the problems it created for domestic financial markets, became acute at the time of the Long-Term Capital Management hedge fund crisis in September 1998. In mid-October, between its regularly scheduled meeting dates, the Fed lowered its target for the Fed Funds rate from 5.25 to 5.00 percent. The Bank of Canada responded that same afternoon with a reduction in the target for the overnight rate from 5.50 to 5.25. The speed of this reaction took markets by surprise, although the Bank had changed its rates in the afternoon on more than one previous occasion. Accordingly, the Bank then announced that, henceforth, it would make changes only at 9 a.m. But this, in turn, led to a phenomenon known as the "nine o'clock watch": whenever a Canadian policy change seemed likely, markets paused in anticipation of it at 9 a.m.; if a change did not occur immediately, they paused again the next day; and so on.

In November 2000, in large part to reduce such uncertainty, the Bank adopted fixed announcement dates for policy decisions. These were set at six-to-seven-week intervals, chosen with a view to assimilating regular releases of key economic data such as the quarterly income and expenditure accounts, but also timed not to coincide with the FOMC's schedule. Beyond reducing the market's tendency to focus too much on possible Bank moves in response to the Fed's actions, this procedure had a number of other advantages.[10] Among them, it ensured that decisions not to change the overnight rate, at times when such a move was anticipated, would be explicit. And regular policy announcements also provided the occasion for a press release explaining the Bank's actions, or lack thereof, ensuring that the Bank must, as a matter of routine, comment at least every six weeks on the conditions surrounding monetary policy.[11]

Reserve Requirements and the Clearing System

The overnight rate for which the Bank of Canada sets its target derives its significance from the strategic role the Bank's deposit liabilities play in the country's clearing and settlement systems and, more specifically nowadays, in the Large Value Transfer System (LVTS) we described in Chapter 3. At the beginning of the 1990s, the LVTS did not exist, so the situation was somewhat different then.

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[10] See Laidler (2000) and Robson (2000a) for some before-the-event comments on the desirability of such a move. Parent (2002) and Parent, Munro, and Parker (2003) provide assessments by Bank of Canada staff in the light of several years' experience.

[11] We note once again, without elaborating at length, that solving one problem in the timing and nature of policy rate decisions can give rise to others. In principle, all new information emerging between each rate target decision ought to receive equal consideration, without regard to its position in the six-week cycle. In practice, for a variety of reasons, including normal cycles of staff work and feedback from financial markets, there is a natural tendency to give late-period information greater weight — a tendency that policymakers must continually struggle to resist.

At that time, the key clearing system in which the Bank exercised its "fulcrum" power was the Automated Clearing and Settlement System (ACSS). The institutions that settled transactions among themselves in that system, known as direct clearers, did so using deposit liabilities of the Bank, on which, at that time, no interest was paid. Their incentive to hold funds in their accounts at the Bank was, first of all, to avoid having to borrow at the Bank Rate when the time came for overnight settlement of each day's transactions. In addition, and crucially, chartered banks were required to hold high-powered money, either currency or deposits at the Bank of Canada, in proportion to their various deposit liabilities. These reserve requirements were higher against immediately chequable demand deposits than against passbook savings accounts, withdrawals from which were (at least formally) subject to notice, and against which cheques could not be written. Under these arrangements, the Bank could create pressures on the banking system to ease or curtail its lending to the rest of the economy by varying the volume of its deposit liabilities, and it typically did so by moving deposits held by the federal government between the chartered banks and itself. When it wished to ease, it would move government deposits from itself to the chartered banks, and *vice versa*.

During the 1990s, the institutional framework supporting these monetary control techniques changed, and so did the techniques themselves. To begin with, there were concerns that imposing non-interest-bearing reserve requirements on the chartered banks but not on other financial institutions was akin to a discriminatory tax, which led to their being phased out between 1991 and 1994. This phaseout naturally reduced the chartered banks' overall demand for high-powered money, which thereafter derived solely from the desire of direct clearers to hold precautionary balances adequate to avoid large or sustained borrowing at the Bank Rate. For the banks, the alternative to aiming at positive end-of-the-day reserve holdings was to acquire more interest-earning assets and risk having to borrow at the Bank Rate should they find themselves in deficit at the end of the day, so their incentive to aim for positive balances was rather weak. The Bank of Canada, therefore, found itself having to exert moral suasion on the banks to ensure that the system's overall demand for high-powered money remained positive.

The advent of the LVTS in early 1999 further reduced the demand for high-powered money. The bulk of the dollar value of clearing and settlement activity among the chartered banks shifted to the new system from the ACSS, and its procedures eliminated the retroactive element that had characterized transactions carried out in the ACSS. Initially, the Bank expected to be able to operate the LVTS while providing zero settlement balances to the system as a whole, relying on the overnight market to clear among those with negative and positive balances at the end of each day. In the event, however, the system did not operate smoothly with zero settlement balances, as the overnight rate sometimes moved erratically and even strayed outside the Bank's target range. The Bank's response was to provide a small net positive amount of balances to the system — at the time of writing, about $50 million on average, and more at certain times of the month.[12] This apparently minor modification seems to have had the desired effect.

Instability of the Demand for Money in the 1990s

In our narrative of the conduct of monetary policy in the 1990s, we have referred from time to time to the growth rate of M1 and of what we call the "M1 gap": M1 growth relative to growth in nominal GDP. There is no consensus among students of monetary policy about the special significance of M1 — those who regard the stock of money as apt to adjust frictionlessly to accommodate changes in demand for it would not normally see M1 worthy of special note. In our view, however, M1's behaviour is a natural focus for economists interested in the links between monetary policy, aggregate demand, and inflation, because currency and demand deposits are "transactions money." Unlike variations in broader measures, such as M2, M2+, and M2++, which are at least as much stores of wealth as mediums of exchange, variations in M1 are likely to be associated with purchases of goods and services that are about to take place or have just taken place. Movements of M1 will thus tend to provide useful advance notice of movements in aggregate demand and output.[13]

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[12] In the immediate wake of the events of September 11, 2001, which disrupted clearing systems far beyond New York City and, indeed, North America, it took an immediate, albeit temporary, injection of more than $1 billion into the accounts of the direct clearers in the LVTS to keep the system operating smoothly and to avoid upward pressure on interest rates.

As Figure 14 (in Chapter 3) shows, in the 1990s, sharp changes in the rate of growth of M1 heralded changes in real income growth and, later, in inflation, as they had done over the previous two decades. The figure also reveals, however, that a problem with interpreting M1 growth data emerged in the 1990s — namely, the rate of M1 growth that seems to have been compatible with the smooth expansion of output at a steady inflation rate increased markedly during the decade.[14]

In the early 1990s, it seemed that an M1 growth rate of about 5 percent annually was appropriate for maintaining a 2 percent inflation rate and a real growth rate in the 2½–3½ percent range. From the middle of that decade until the time of writing, however, the average annual growth rate of M1 has been slightly higher than 11 percent without any sustained tendency for inflation to rise above its target value. If rising inflation is the normal consequence of a stock of money that grows systematically faster than the demand for it over so prolonged a period, the behaviour of M1 seems to suggest that something caused a shift in demand for narrowly defined money that was outside historical relationships. What that something — or things — might be is controversial, but we can offer the broad outlines of an explanation of what happened.

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[13] As we noted earlier, movements in the broader aggregates tend to coincide with movements in nominal spending, rather than leading them.

[14] This was not the first time that instability in the demand for M1 had resulted from institutional developments in the banking system. As Freedman (1983) documents, the development of daily interest chequing accounts in the late 1970s and early 1980s also created problems, which were particularly serious at a time when the Bank was actually targeting M1 growth. On later experience, see Hendry (1995); Atta-Mensah (1996); and Atta-Mensah and Nott (2000).

To begin with, the phasing out of reserve requirements, mentioned above, likely played a part, as Boessenkool, Laidler, and Robson (1996) document. At the beginning of the decade, the reserves required against chequable demand deposits were higher than those on other, less immediately liquid accounts, and required reserves were computed on balances held at the end of the business day. Banks therefore preferred their customers to hold less liquid accounts overnight; for their business customers, they automatically transferred business demand deposits to some form of notice deposit at the end of each day and returned them the next morning. The disappearance of reserve requirements eliminated the incentive for this expensive operation, and funds began to remain in demand deposits overnight. While the phaseout was going on, the measured amount of demand deposits grew relatively rapidly; once the adjustment was over, these measures likely tracked the actual growth of transactions deposits more accurately than they had in the past. Both effects had more to do with changes in the way money holdings were measured than with any shift in the behaviour of money holders, but because demand deposits are a component of M1 and less liquid accounts are not, they affected the growth of the stock of M1.

A second factor affecting the measurement of M1 became important later in the decade as participation by the general public in financial markets began to spread. Included in M1 are funds brokers hold in cash deposits as part of the accounts of the clients on whose behalf they are trading. These accounts, which have little or nothing to do with transactions for goods and services, seem to have grown in importance in the late 1990s.

With the benefit of hindsight, it appears that, even as these two effects changed the trend rate of growth of measured M1, fluctuations around that trend continued to signal changes in aggregate demand, as they had in previous decades. Yet, we are aware of no one who forecast these effects, and they made M1's behaviour a less reliable indicator of the impulse monetary policy was providing to the economy while they were occurring. Furthermore, at the time of writing, no one is sure whether the second of them is still in progress, whether some new, yet-to-be discerned factors are at work, or whether and when some new institutional disturbance is likely to come along. We take up the significance of all this again below, in our assessment of the current relevance of monetary aggregates to the conduct of monetary policy.

Key Themes in the Development of Monetary Policy since the Early 1990s

Two dominant themes emerge from the foregoing narrative. First, as far as policy goals are concerned, the Bank of Canada seems to have become more single minded about the pursuit of low inflation and more intent on moving its policy rate with inflation control as its paramount objective over the course of the 1990s, and less prone to distraction by other variables such as the exchange rate. Second, the Bank has steadily refined its operating procedures and the institutional framework within which they work. It has aimed to make its policies technically more efficient and to improve their communication to both financial market participants and the public at large. In the process, the Bank has become increasingly concerned to explain its views of the monetary transmission mechanism and what these imply for the likely future conduct of policy.

In assessing these tendencies, two questions arise. How much does the Bank's growing single mindedness stem, on the one hand, from increasing confidence in its ability to hit its inflation targets with the aid of the technical refinements to its operating framework and, on the other, from an improvement in the overall economic environment — particularly its fiscal component — which has made its policies more credible with the public? And what do these tendencies imply for what Canadian monetary policy should do, and is likely to do, in the future? We take these matters up in the next part of this book.

PART IV

Lessons from Recent Canadian Experience

7 Assessing the Experience

Canada's experience since the early 1990s has provided reasonably definitive answers to some questions that were outstanding at the beginning of the decade, and taken us part-way toward answers to others. It has also given rise to new debates, however, which we discuss in this chapter. We first take up the question of the feasibility and alleged ongoing costs of low inflation, as well as the interaction between monetary and fiscal policy. We then review the expected benefits of low inflation, both those that seem to have materialized, and those — especially on the productivity front — that so far seem elusive. Finally, we take up some issues raised by the Canadian dollar's steady depreciation against its U.S. counterpart after 1991, a trend that generated considerable surprise in light of the fact that Canadian inflation was, on average, a little lower than that south of the border over the same years.

Low Inflation and the Monetary-Fiscal Mix

The skepticism that greeted the Bank of Canada's statements at the end of the 1980s about pursuing price stability — not simply about the wisdom of the goal, but about its very achievability — is difficult to recall clearly a decade and a half later. Many analysts who held "cost-push" views of inflation were convinced that factors such as inflation abroad and the feed-through effects of higher interest rates on prices would render a "made-in-Canada" low inflation policy impossible or unendurable. Experience since the implementation of inflation targets has shown that these views were mistaken.

The Feasibility of Low Inflation

Since the 1980s, the Bank of Canada has demonstrated its capacity to chart an independent course for inflation in Canada — one, moreover, in which inflation is lower than historical experience and lower than in many other countries. In addition, low inflation in the range Canadians have experienced in the past decade has proven not to impose the economic and social distress its critics had predicted at the outset of inflation targeting. In these respects, the lessons of the past decade, which have been repeated in other countries, are clear.

It has also become apparent that monetary and fiscal policies are complementary. It is no accident that Canada's macroeconomic performance improved so dramatically after the mid-1990s. The struggle to bring down inflation while the federal budget was still so far from balance that the ratio of net federal debt to gross domestic product (GDP) was relentlessly rising created powerful tensions. The combined pressure of public borrowing on domestic saving and mounting worries about default or eventual monetization kept nominal and, therefore, real interest rates high in the first half of the 1990s, even after inflation had declined and the Bank of Canada had begun fostering more rapid money growth.[1] The movement of government budgets into a sustainable position after 1995 allowed interest rates across the term spectrum to come down, completing the transition to a credible low inflation regime and permitting a resumption of balanced economic growth.

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[1] The real interest rates to which we refer here are nominal rates adjusted for actual inflation. Our argument amounts to suggesting that fears about fiscal policy generated expectations about inflation that, in the event, systematically overestimated its realization.

Interaction with Other Goals

In the early 1990s, supporters of low and stable inflation did not present it as a policy goal in its own right. Rather, low and stable inflation was defended as a means, and the best contribution monetary policy could make, to the more important and quite general end of improving Canada's overall economic performance. Although low inflation was often said to be necessary, no one claimed it was a sufficient condition for such an improvement — liberalization of international trade and investment flows and reform of tax and income support programs, for example, were expected to make their own contributions. And, as the 1990s progressed, many advocates of low inflation also supported fiscal and labour market reforms.

The Effects of Low Inflation

Any assessment of the performance of monetary policy in Canada in the 1990s must look beyond the behaviour of the price level itself to that of the real economy and to other changes that may have affected the economy's performance. The ways in which inflation can undermine the economy's real performance — and, hence, low inflation's potential for improving it — were much discussed in the early 1990s.[2] We turn now to measures of specific distortions related to inflation, the volatility of real output, the performance of the labour market, and the growth of productivity in Canada.

Reducing Distortions

Persistent inflation, particularly when its rate fluctuates, distorts economic activity in a number of ways. To begin with, inflation acts as a tax on holdings of transactions money, which bears little or no interest. This tax leads firms and households to hold less transactions money than they otherwise would, which causes them to divert resources that could have been used in other ways to support their more careful management of their cash balances. Furthermore, any tendency of the average purchasing power of money to fall requires more frequent adjustments in nominal wages and prices. Because there is no mechanism to synchronize such adjustments across, or even within, various sectors of the economy, inflation induces arbitrary variability into the structure of relative wages and prices. This variability increases the costs to individuals and firms of obtaining accurate information on which to base their decisions, and can produce mistakes in the allocation of resources when they interpret a temporary change in relative prices arising from unsynchronized adjustment as a permanent change that reflects economic fundamentals.

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[2] For three collections of essays dealing with the pros and cons of inflation reduction both before and after the event of the impact of disinflation, see Lipsey (1990); York (1990); and Laidler (1997). Especially notable is Howitt's (1990) seminal essay on the likely benefits of low inflation and his retrospective study (Howitt 1997) of the extent to which these benefits had been realized.

A related effect of inflation is its tendency to shorten contracts. The need to adjust more frequently, for example, reduces the intervals that elapse between the striking of bargains about wages. It also adds uncertainty to wage negotiations, not just about the future course of the cost of living but also about relative current and future wages. These tendencies make wage bargaining more fractious and strikes more likely.

The fact that higher average inflation tends to be associated with more volatility in inflation exacerbates its tendency to distort price signals and shorten contracts. Whether this tendency arises from behavioural changes at high inflation rates or from the monetary authorities' allowing more variability in inflation at high rates, the result is to further complicate price comparisons over time and discourage long-term financial transactions and investments — Judson and Orphanides (1999) show that the adverse effects of inflation volatility are additional to those stemming from higher inflation *per se*.

The problems inflation creates are especially visible in the areas of taxation and financial intermediation. Most tax and contracting conventions implicitly assume that the purchasing power of money is stable, and efforts to make taxation and financial contracts inflation neutral have proven extraordinarily frustrating. Most tax codes, for example, require firms to account for their inventories on an historical cost basis. In an inflationary environment, therefore, the purely nominal gains that arise between the purchase and the sale of a good held in inventory are taxed as if they represented real profit — a problem magnified by the differing importance of inventories in different lines of business and their consequent unequal treatment in different sectors of the economy. The use of historical costs in determining depreciation for tax purposes likewise tends not only to increase the burden of taxation by understating costs, but also to induce unequal treatment of firms that are affected differently.

With respect to financial intermediation, contracts such as mortgages and annuities often specify a series of equal nominal payments. When inflation and, therefore, nominal interest rates are high, such payments "front load" contracts — households with mortgages bear a higher real burden early in their contracts and a lower one later, annuity holders get larger real payments early in retirement and smaller ones later, and debt-financed businesses deduct "too much" from taxable income early on and "too little" later. It also becomes profitable to exploit profit opportunities created by inflation-induced distortions; from a social point of view, resources devoted to seeking out and exploiting these opportunities are wasted.

Canada's experience in the 1990s and early 2000s suggests that lowering inflation did reduce some of the costs we have just described. Expectations of inflation — as measured by the spread between nominal-return and real-return long-term bonds and by surveys such as those by Watson Wyatt and Consensus Economics — have come down. The actual inflation rate has also tended to be less volatile than it was during the period of higher inflation. The standard deviation of annual increases in the consumer price index (CPI) over three-year spans stayed below one percentage point for almost a decade after the influence of the disinflation itself dropped out of the measure in late 1994 (Figure 26)[3] — something Canadians had not experienced since the beginning of the 1970s.

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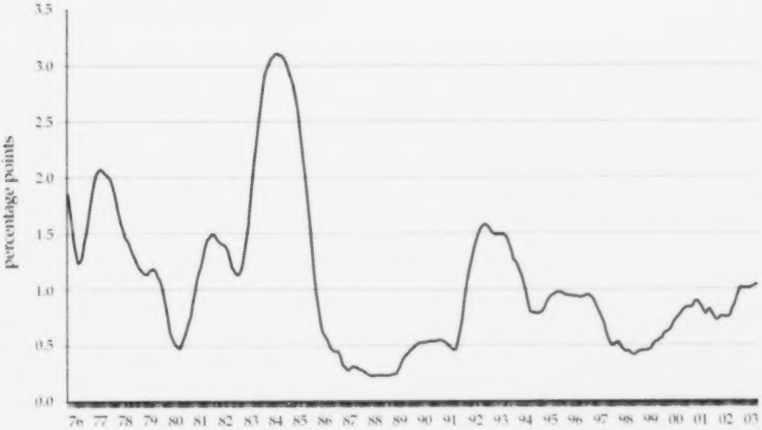
[3] The volatility measure is adjusted to remove the impact of the goods and services tax, estimated at 1.4 percent, from the year-over-year CPI increases recorded in 1991.

Figure 26: *Standard Deviation of Annual Change in the CPI, Canada, 1976–2003*
(36-month window)

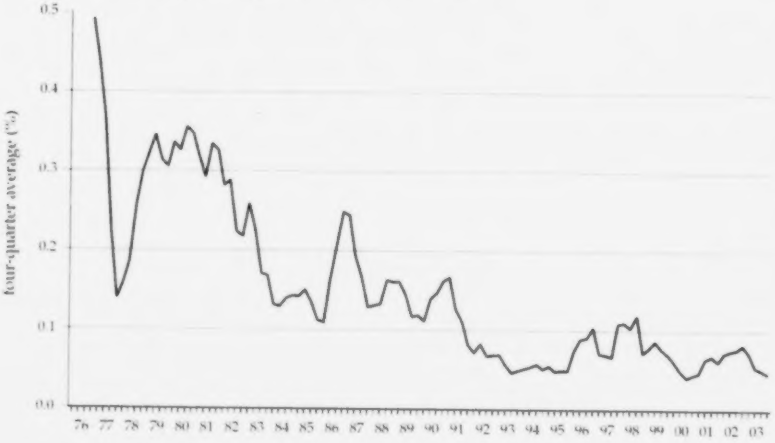


Sources: Statistics Canada, CANSIM database, table 326-0001; authors' calculations.

The proportion of workdays lost to strikes has declined even more markedly. Even at its peak, during strikes by postal and other public sector workers in late 1997 through mid-1998, this measure attained only the lowest levels that were registered in the mid-1980s and never approached those of the 1970s (Figure 27). The average length of new collective bargaining agreements was consistently longer in the second half of the 1990s than at any time since these data started being collected in the late 1970s (Figure 28). Moreover, the proportion of such agreements that included cost-of-living-adjustment (COLA) clauses to protect workers from unexpected surges in inflation was consistently lower than at any time since the late 1970s (Figure 29).

The average maturity of business credit appears to have lengthened since the early 1990s, with the proportion of business credit with a maturity of less than a year falling steadily during that decade

Figure 27: ***Days Lost to Strikes as a Share of Employee-Days, Canada, 1976–2003***



Note: Days lost are estimated by Human Resources Development Canada on the assumption of five days' work per week. The denominator is estimated on the basis of 60 days' work by each person shown as employed in the Labour Force Survey each quarter.

Sources: Statistics Canada, CANSIM database, tables 278-0009, 282-0087; authors' calculations.

(Figure 30). Likewise, the share of fixed interest rate mortgage credit outstanding with a maturity of less than a year has shrunk, while the share with a maturity of five years or more has grown (Figure 31).[4]

Although investment has not been as high relative to output since the early 1990s as in previous cycles (when measured in nominal dollars), this measure has been affected by rapid declines in prices for information technology and computing-related capital goods. In real terms, capital investment in the late 1990s was higher relative to output than it was during the economy's previous cyclical peaks one and two decades earlier (Figure 32), which may also reflect the more benign environment associated with lower inflation.

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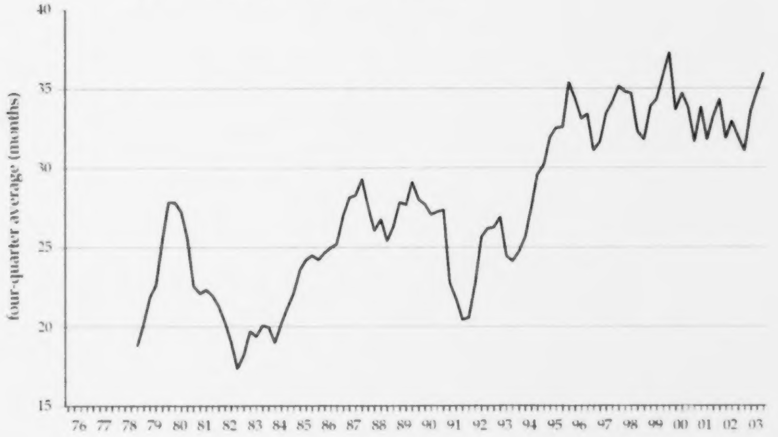
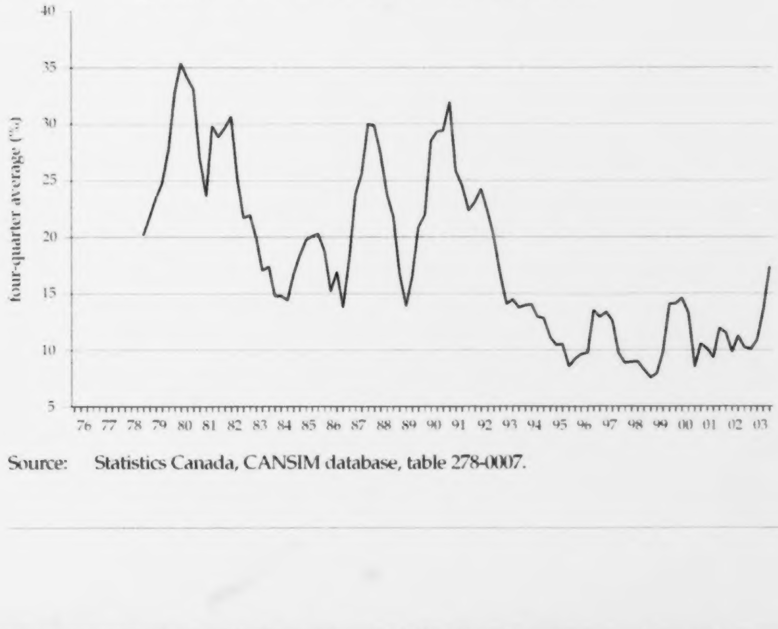
[4] The ratio of variable rate mortgages to the total rose from 3 percent to 20 percent between 1995 and 2003, a development that may indicate lower fears of sharp upward moves in interest rates in a low-inflation environment.

Figure 28: ***Average Length of New Collective Bargaining Agreements, Canada, 1978–2003***



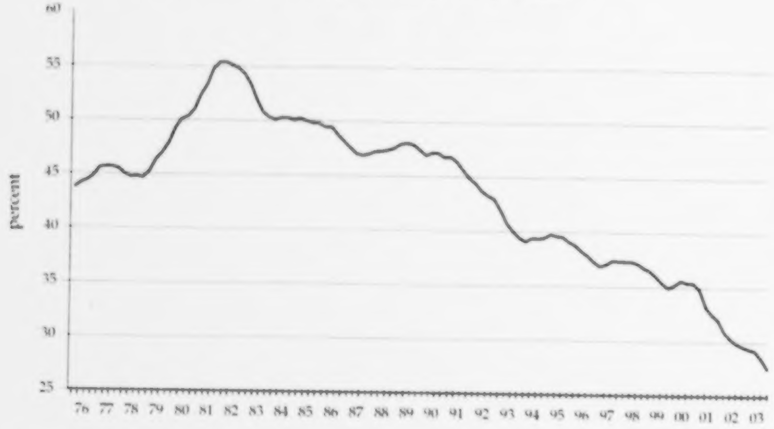
Source: Statistics Canada, CANSIM database, table 278-0007.

Figure 29: ***Share of New Collective Bargaining Agreements with COLA, Canada, 1978–2003***



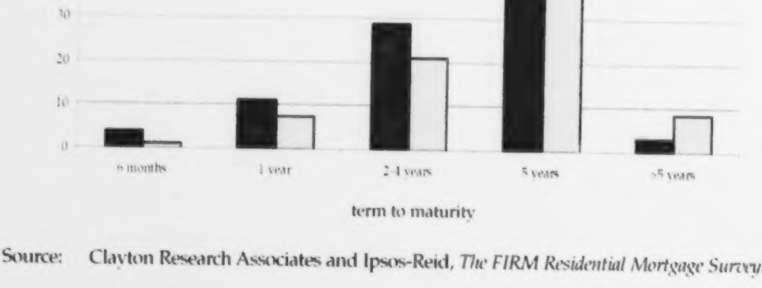
Source: Statistics Canada, CANSIM database, table 278-0007.

Figure 30: ***Short-Term Business Credit as a Share of Total Business Credit, Canada, 1976–2003***



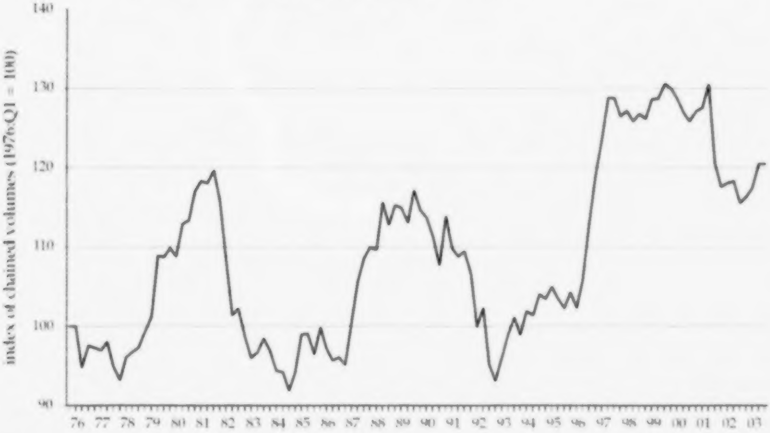
Source: Statistics Canada, CANSIM database, table 176-0023.

Figure 31: ***Maturities of Fixed-Term Mortgages, Canada, December 1995 and December 2003***



Source: Clayton Research Associates and Ipsos-Reid, *The FIRM Residential Mortgage Survey.*

Figure 32: ***Nonresidential Fixed Investment Relative to GDP, Canada, 1976–2003***



Source: Statistics Canada, CANSIM database, table 380-0002.

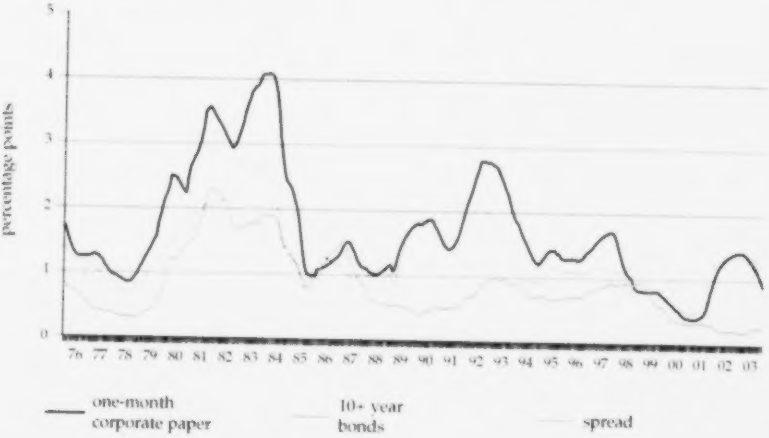
The Volatility of Output and Interest Rates

The fact that higher rates of inflation tend to be associated with greater variability of inflation points to another potential difference between economies that are more inflationary and those that are less inflationary — namely, higher inflation may be associated with more variability in monetary conditions and in real output.

These associations are not matters of necessity. It could be, for example, that more precise targeting of inflation would require a central bank to move short-term interest rates around more than it would choose to do if stability in interest rates were a matter of greater concern. Likewise, one can imagine situations in which management of inflation through control of the output gap would lead a central bank to a more active stance that would be reflected in greater volatility of spending and output.

As it happens, however, lower and more stable inflation in Canada appears thus far to have been associated with less volatility in interest rates. Looking, as with inflation, at standard deviations

Figure 33: ***Standard Deviation of Interest Rates, Canada, 1976–2003***
(36-month window)



Sources: Bank of Canada; authors' calculations.

over three-year time-spans, we see not only a downward trend in the volatility of long-term interest rates over the period when the Canadian economy made the transition to lower inflation, but also a more pronounced downward trend in the volatility of short-term interest rates, as well as a decline in the volatility of the spread between them (Figure 33). Perhaps not surprisingly, a look at the standard deviation of quarterly changes in real GDP over similar three-year spans (Figure 34) suggests that real output in Canada has been, on average, more stable during the past decade or so than it was during the previous 20 years. Formal statistical investigations of the date of this change have tended to locate it in the early 1990s.[5]

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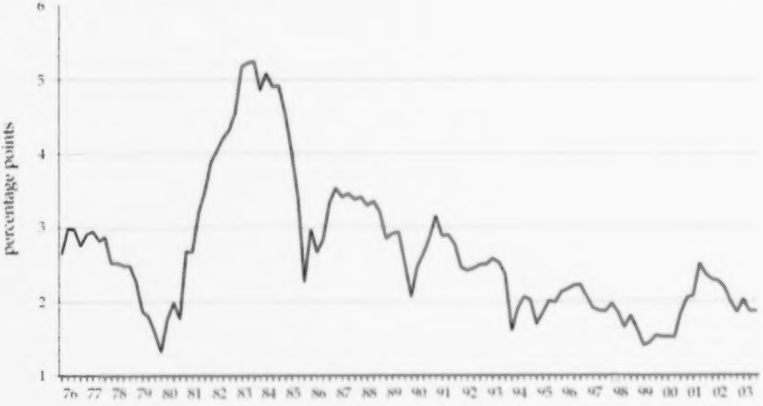
[5] Debs (2001) finds evidence of a decline in the volatility of real GDP growth in Canada beginning in 1991. Liu and Wong (2003) favour early 1987 as the date marking a decline in the volatility of total GDP, but this choice is sensitive to the estimation technique used; when they look at individual components of final demand, they tend to observe declines in volatility in the early 1990s.

Figure 34: ***Standard Deviation of Quarterly Changes in Real GDP, Canada, 1976–2003***
(12-quarter window)



Sources: Statistics Canada, CANSIM database, table 380-0002; authors' calculations.

Less volatility in real variables since the early 1990s is probably not the result of monetary policy alone. Much else has changed over time, not least the technology and organization practices related to inventory management, which appear to have reduced the tendency for changes in inventory to contribute to swings in production since the 1980s. At the same time, however, the swings in fiscal policy during the 1990s might have been expected, other things being equal, to add some volatility to output. Although variations in imports can, in principle, cushion the impact of fluctuations in domestic demand on output, the Canadian economy's increasing exposure to international trade, which tends to exhibit more marked swings in volumes than does domestic demand, might also have been expected to enhance real volatility. The possibility that lower inflation lessened swings in real variables, both by reducing the tendency for monetary policy itself to make dramatic moves and by reducing the likelihood of miscalculations by individuals and businesses, does, therefore, seem to us worth taking seriously.

Unemployment and Employment

One indicator of economic performance that merits special attention in this context is the unemployment rate. During the 1990s, some commentators expressed fears that the move to low inflation would drive the unemployment rate up permanently, although the principal reason they gave for these fears changed somewhat as the decade progressed. At first, the key concern was *hysteresis* in the labour market — the possibility that high unemployment would tend to persist because the skills of those who lose their jobs would deteriorate through lack of use, and because new entrants to the labour force would lose on-the-job training at the start of their careers. Later, the key concern was that labour market frictions would increase because changes in relative wages — a real effect — would more frequently require nominal wage reductions when inflation was low, and that resistance by affected workers would make the stable inflation rate of unemployment higher.[6]

Both these effects probably were at work during the 1990s. There is evidence that temporary slack in the labour market has long-lasting effects, which were visible in Canada early in the decade, but long lasting is not the same as permanent. If it were, the tradeoff between inflation and unemployment would be permanent. However, employment's recovery later in the decade without any step-up in inflation alleviated concerns that the efficiency of the Canadian labour market had been permanently impaired by earlier experience.

The question of the importance of workers' resistance to nominal wage cuts (or "downward wage rigidity") inspired a brief flurry of investigation in the mid-1990s. An early survey of wage settlements reached in major collective bargaining agreements seemed to show that fully 40 percent of them potentially were affected by the zero bound.[7] Closer inspection of these settlements revealed, however, that some small decreases had been rounded up to zero, that they had been heavily weighted with public sector bargains, which — as they were struck during a wage freeze imposed by a fiscally beleaguered Ontario government — were unrepresentative of normal wage bargaining behaviour, and that many were reporting just the first year of a multiyear contract that had been struck partway through the year and that provided for wage changes later in the term. Subsequent work, which adjusted for these problems and recognized that major collective bargaining agreements covered a relatively small fraction of the total workforce, found that wage stickiness, though present, was far less pervasive than had initially been suggested (see Hogan 1998; Crawford 2001a; and Crawford and Wright 2001).

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[6] Fortin (1996) expressed this concern forcefully in the Canadian context; earlier (1991), he had presented evidence of hysteresis in the economy.

[7] Fortin (1996) is the seminal Canadian work on this topic. Akerlof, Dickens, and Perry (1996) drew the attention of an international audience to the potential significance of these issues, and Fortin's work was one of the sources they cited.

Overall, as we have noted, the unemployment rate fell markedly in the 1990s; by the end of the decade, it had reached its lowest level in a generation. Also encouraging was the behaviour of two other key labour market indicators: the participation rate (the share of the noninstitutionalized population ages 15 and up that is either employed or looking for work) and the employment rate (the share of that population that is actually working). Both indicators improved markedly over the 1990s — particularly during the second half of the decade, when the low inflation regime had gained added credibility from an improving fiscal situation. By the end of the 1990s, although the participation rate was not quite back to its peak of the late 1980s, it was nevertheless at a level above anything seen before the mid-1980s. The employment rate had also virtually regained its all-time high of the late 1990s (see Figure 2, in Chapter 1). By early 2003, both the participation and employment rates had surpassed their late 1990s' peaks. Thus, the low inflation environment that monetary and fiscal policies combined to establish after 1995 did not, on balance, undermine the performance of the labour market in the way its critics had predicted.

Productivity

Experience from many countries over a long period of time shows that high inflation tends to be associated with poorer economic performance, as measured by real GDP per person. Accordingly, with lower inflation, the overall performance of the Canadian economy ought to have improved. However, the strength of the statistical relationship between high inflation and poor performance comes mainly from countries and times in which inflation was considerably higher than it has been recently in Canada — say, 20 percent or more.[8] Moreover, looking at the overall rate of real GDP growth in Canada (which did increase) only since the mid-1990s is not a promising way of assessing the low inflation regime, since that period encompasses a cyclical rebound and a number of other effects — notably the continuing adjustments to the Canada-U.S. and North American Free Trade Agreements (FTA and NAFTA) — that were occurring at the same time. Instead, one can get a better view of overall Canadian economic performance by focusing on productivity — the level of output the economy produces from a given level of inputs.

If lower inflation removed some distortions in decisionmaking, then the more efficient use of existing resources should have produced a one-time increase in the level of productivity. And, to the extent that it created an environment conducive to increased investment embodying new, more efficient technology, it should also have raised the growth rate of productivity.

Productivity is notoriously hard to measure, and different measures yield different estimates of its level and rate of change. One popular method is to obtain measures of labour productivity by comparing GDP with employment or, better, with hours worked. In principle, such measures should be applied to the entire economy,

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[8] This is the finding of Barro's (1996) study carried out for the Bank of England. See Ragan (1998) for a discussion of these issues in a Canadian context. Real GDP per head is a commonly used, if rough, indicator of material standard of living. We admit that, even abstracting from the pitfalls covered by the adjective "rough," there is much more to the overall quality of life than its material component. Nevertheless, the material component is important and its production is something about which economics has a lot to say, so we make no further apologies for using it as a crude benchmark for assessing the economy's performance.

but because most of the public sector's output is not priced in the market, statisticians measure the value of large segments of public sector output by the value of the inputs used to produce it, which has the effect of building in an assumption of zero productivity growth in such activities. For that reason, productivity measures and comparisons based on output from the business sector are more useful.[9]

Measures of business sector labour productivity in Canada show that it grew during the 1990s at a higher average rate than in the 1980s, and that this improvement seems to have been more marked toward the end of the decade. So far so good, but U.S. data also show an improvement, and one greater than that in Canada (see Figure 35), which presents something of a puzzle. Although inflation fell markedly in both economies in the 1990s, the fall was greater in Canada, while the effects of the FTA and NAFTA were expected to be more far reaching in Canada than in the larger and much less open U.S. economy. The two trade agreements might have been expected to lead to larger improvements in productivity in Canada than in the United States, but they did not.

Further light can be shed on this puzzle by measuring productivity relative not only to inputs of labour, but also to inputs of capital.[10]

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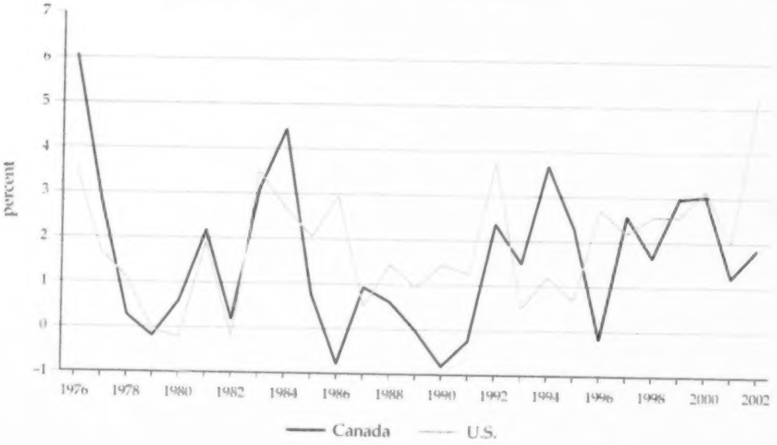
[9] We note that business sector output includes the output of services industries, which is also difficult to measure. For this reason, some economists prefer to use productivity growth in goods-producing industries alone as an indicator of the economy's overall performance. Concentrating on a narrower range of activities when measuring productivity creates classification problems, however, not least because calculating the value of manufacturing output requires, among other things, subtracting the value of services used as inputs to manufacturing. For reasons such as this, we prefer the broader measures of business sector output.

[10] More sophisticated decompositions of inputs are also possible, most notably those that distinguish between the effects of hours put in on the job from those attributable to the quality of the "human capital" putting in those hours. Notwithstanding the insights these decompositions inspire on an analytical level, applying them empirically, especially in a two-country comparison, puts more weight on the data than the precision of current measurements suggests is wise. Gu et al. (2002) provide a comprehensive and up-to-date guide to these issues as they arise in the Canadian context.

Figure 35: ***Growth of Business Sector Output per Hour, Canada and the United States, 1976–2002***



Source: Centre for the Study of Living Standards; available at website: www.csls.ca/data/ipt1.asp.

This measure, often termed *total* (or *multi-*) *factor productivity*, compares output to a weighted average of labour and capital inputs. Comparing Canadian performance in the latter 1990s to its earlier performance and to U.S. performance over the same period shows, once again, an improvement in both countries' productivity growth over time. In this case, however, the contrast between the two countries is less marked (Figure 36).[11] The reason seems to be that the United States added to its capital stock more rapidly than Canada did in the 1990s. While Canada's investment-to-GDP ratio rose, the U.S. ratio, fuelled by frantic capacity building in the computing and telecommunications industry, rose even more. Supported by a

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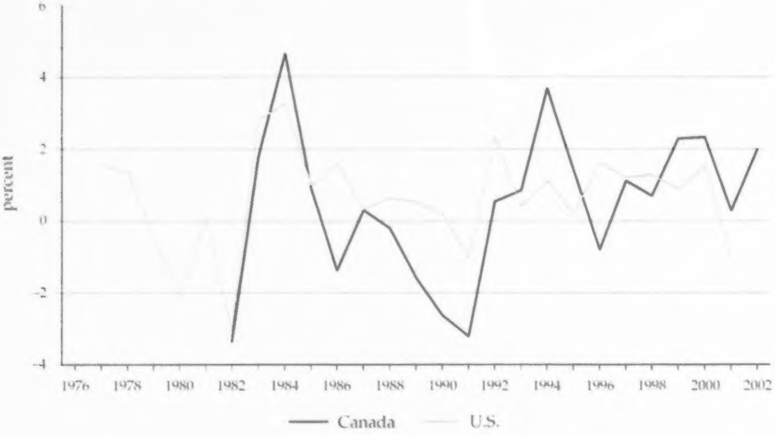
[11] Similar comparisons of the two economies' manufacturing sectors show superior productivity growth in the United States on any measure — an issue we take up below — but that edge is offset by superior Canadian performances in other sectors. It is also the case that the U.S. advantage within manufacturing is confined to a narrow range of high-tech industries. On these matters, see Pilat (2001); Rao and Tang (2001); and Armstrong et al. (2002).

Figure 36: ***Growth of Multifactor Productivity in the Business Sector, Canada and the United States, 1976–2002***



Note: Canadian data are not available on a consistent basis before 1981; U.S. data for 2002 were not available at the time of writing.

Sources: Statistics Canada, CANSIM database, table 383-0001; United States, Department of Commerce, Bureau of Labor Statistics.

more rapidly growing capital stock, the productivity of U.S. labour also grew more rapidly.

In summary, then, productivity in Canada rose in the 1990s — faster in the second half of the decade. The improvement was rather muted, however, and appears to have been driven to an important extent by adjustments to the FTA and NAFTA.[12] It also mirrored, though still fell short of, the improvement in the United States. If fears of major long-term ill-effects from lower inflation proved unrealistic, so did hopes of major long-term beneficial effects on productivity.

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[12] An early study of the effects of free trade on export performance and productivity is Schwanen (1992), while Trefler (2002) provides a more recent and, therefore, more definitive analysis. Baldwin and Gu (2003) show that participation in export markets improves productivity: almost three-quarters of Canada's productivity growth in the 1990s came from exporting plants even though they accounted for less than 50 percent of employment (the results hold for both domestic- and foreign-owned companies). Trefler finds that long-term productivity gains exceeded shorter-term adjustment costs of the FTA; in industries subject to large tariff cuts, the short-term costs included a 12 percent drop in employment, but the long-term impact was a labour productivity gain of 14–15 percent.

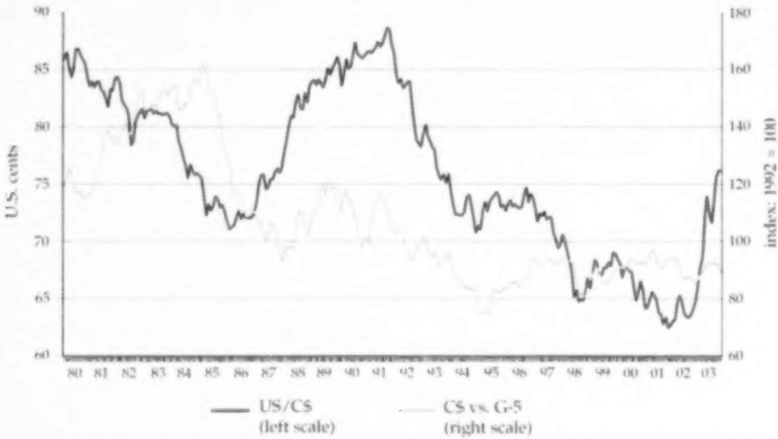
The Vexed Question of the Exchange Rate

Some economists have looked for an explanation of the way Canada's productivity lagged that of the United States in the performance of another variable that performed disappointingly during the 1990s — namely, the exchange rate of the Canadian dollar against its U.S. counterpart.

The main story of the Canadian-U.S. dollar exchange rate between 1970, when the rate began to float, and 2000 was an early and short-lived appreciation followed by secular decline. The U.S. dollar is not the only other currency in the world, of course, and the Canadian dollar's performance against a basket of other major currencies has sometimes been very different (see Figure 37). Notably, in the later 1990s — the very time when concerns about the exchange rate were becoming particularly acute — the Canadian dollar was holding its own against currencies other than the U.S. dollar. Nevertheless, the dominant position of the United States in Canada's economic relations makes the Canadian-U.S. dollar exchange rate a central focus of Canadian thinking. Accordingly, the long-term declining trend against the U.S. dollar became a source of some unhappiness at the end of the 1990s, and continued to mark discussions even after the Canadian dollar recovered in 2003 to the levels of the mid-1980s and 1990s.

Here again, it is worth noting that the Canadian dollar's performance against currencies other than the U.S. dollar was also very different during this latest episode. All in all, it is hard to resist the conclusion that the major swings in the Canadian-U.S. dollar exchange rate since about 1998 reflect factors affecting the U.S. dollar against other currencies in general at least as much as they reflect factors impinging specifically on Canada's currency.

Figure 37: *Canadian Dollar Foreign Exchange Rates, 1980–2003*



Note: The exchange rate against the other C-6 currencies (the euro and its predecessors, the Japanese yen, the U.K. pound, the Swiss franc and the Swedish kronor) is calculated by backing the U.S. dollar out of the C-6 index. The U.S. dollar has a weight of 0.8584 in the index (see website: www.bankofcanada.ca/en/mci2.htm).

Sources: Bank of Canada; authors' calculations.

Nominal and Real Exchange Rates

In exploring the possible causes and consequences of the Canadian dollar's movements against the U.S. dollar, it helps to start by allowing for the different behaviour of domestic prices in the two countries. The *nominal* exchange rate is simply the price of one currency in terms of another, with no allowance for differences in the prices and costs of domestic goods and services that the two currencies can buy. The *real* exchange rate, by contrast, adjusts the nominal exchange rate for differences between the cost of a representative bundle of goods and services produced in one country and that of a similarly representative bundle produced in the other.

If two countries produced and consumed identical goods and services in identical proportions, if the structures of their taxes and subsidies were the same, and if there were no transportation costs, the price of each county's representative bundle of goods and services,

Box 2: *Purchasing Power Parity and Foreign Exchange Rates*

A specific use of price-level-adjusted exchange rates that uses the assumption of identical or, at least, comparable baskets of goods and services is in international comparisons of living standards. The purchasing-power-parity exchange rate is the rate that would permit the same sum of money to purchase the same bundle of goods and services in more than one country; it thus allows more meaningful comparisons of living standards than nominal incomes converted at market exchange rates provide.

If, as is currently the case, one Canadian dollar's worth of a representative bundle of goods and services bought in Canada costs US$0.80 in the United States, an exchange rate of US$0.80 equals C$1.00 is appropriate to use in comparing living standards in the two countries. Using the actual exchange rate (currently about US$0.75) would effectively overstate the relative level of domestic prices in Canada, thus understating Canadians' living standards.

As long as the real exchange rate between countries remains constant, the maintenance of purchasing power parity requires the nominal exchange rate to move inversely with the two countries' respective price levels. It does not follow, however, that any movements in the actual exchange rate away from its purchasing-power-parity value necessarily represents a misalignment caused by some failure in the foreign exchange market. It might also reflect the influence of factors affecting the underlying real exchange rate, and might simply demonstrate that factors other than domestic price levels can influence the nominal exchange rate.

adjusted by the current exchange rate, would never change. The real exchange rate would remain constant, and the theory of *purchasing power parity* would explain all variations in the nominal exchange rate between the two countries, which would move to offset any differences in their respective inflation rates (see Box 2).

In the real world, however, any pair of countries will produce and consume different types of goods and services in different proportions. (If they did not, they would not trade with one another.) They will also have different structures of taxes and subsidies, and transport costs will be incurred in moving goods and services between them. These factors imply that the real exchange rate between the two countries will likely vary over time.[13]

Two major forces behind real exchange rate movements are worth separate attention. The first of these, known as the *Balassa-Samuelson effect*, after analysis developed by Balassa (1964) and Samuelson (1964), arises from differences in productivity growth, both between countries on average and between sectors within countries. Transportation and other costs not only exist; they are much more important for some goods and services than for others. Differences in prices for similar goods between two currency zones will readily be arbitraged away when transportation and other costs for the items are relatively small, as would be the case, for example, for consumer durable goods or textiles or for such services as software development — types of goods and services often referred to for convenience as *tradables*. But differences in prices will not be arbitraged away so readily when such costs are relatively large, as they are, for example, for automobile repairs, live theatre performances, or haircuts — types of goods and services that are considered to be *nontradables*.

The Balassa-Samuelson effect on the real exchange rate arises because productivity growth tends to be faster in sectors that produce tradables and slower in sectors that produce nontradables, and because average productivity growth rates differ from country to country. Average wages and prices in an economy will reflect productivity levels in both the tradables and nontradables sectors: average wages and prices will be higher in places where productivity is high than in places where it is low, and average wages and prices will go up faster in places where productivity growth is rapid than in places where growth is slow. This phenomenon explains why nontradable services in less-developed countries appear so inexpensive to visitors from developed countries. It also implies that differences in productivity growth between countries tend to be reflected in their real exchange rates, with the faster-productivity-growth country experiencing an appreciation of its real exchange rate against the slower-productivity-growth country.[14]

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[13] Indeed, the real exchange rate between two regions using the same currency, such as two provinces of Canada or two member countries of a currency union, will also change as relative price levels change, even though no nominal exchange rate movement can occur. See Bayoumi and Macdonald (1999) for a study of these effects among regions of Canada.

What these trends imply for the nominal exchange rate depends on what is happening to domestic inflation in the two countries, and also on the exchange rate regime. Suppose, for example, that inflation in the two countries is the same. Then, a change in the real exchange rate will be reflected in a proportional change in the same direction in the nominal exchange rate. Suppose, by contrast, that the nominal exchange rate between the two countries is fixed. Then, the required change in the real exchange rate will occur through wages and prices rising more slowly (or possibly falling) in the slower-productivity-growth country. In a situation where inflation rates are not the same and the exchange rate is flexible, the real exchange-rate change will be reflected in some combination of changes in the price levels of the two countries and the nominal exchange rate between them.

The second force affecting the real exchange rate is implicit in the facts that the composition of tradable goods output can differ between countries and that relative prices of one country's tradables in terms of those of the other, the *terms of trade*, can change. Suppose, for example, that world prices for an important category of a country's exports are falling relative to those of its imports. This deterioration of its terms of trade means that it can buy fewer imports for a given volume of exports and that the average real incomes of its residents must fall relative to those available in its trading partner — a relative decline that implies a fall in the country's real exchange rate.

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[14] It also means that market exchange rates tend to overstate the contrast in living standards between developed and less-developed countries, which is why such comparisons should use purchasing-power-parity exchange rates.

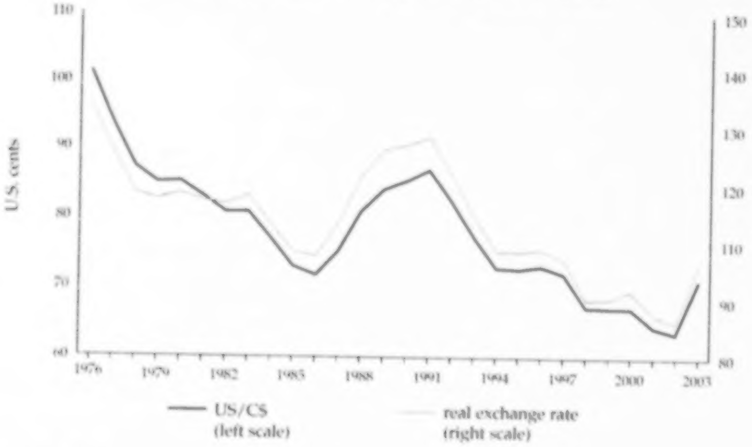
Explaining the Downward Trend in the Canadian-U.S. Dollar Exchange Rate

A key implication of the above discussion is that the behaviour of the Canadian dollar against its U.S. counterpart since 1970 probably has no simple explanation. Figure 38 shows that the real exchange rate fell less than did the nominal rate, at least until the early 1990s, which suggests that systematically higher inflation in Canada up to that point explains some of the Canadian dollar's nominal depreciation. It clearly does not explain all of it, however — the real exchange rate moves around a good deal. Whatever theory explains the Canadian dollar's behaviour in the 1990s, moreover, it clearly is not purchasing power parity. During the decade, the inflation rate was slightly lower in Canada than in the United States, but this was accompanied, not by a slowly appreciating, but a systematically depreciating, currency.

Much effort in recent years has gone into analyzing this experience. In our view, the single most important factor driving the Canadian dollar's real exchange rate against the U.S. dollar since the mid-1980s has been changes in Canada's terms of trade. Canada is a substantial producer and net exporter of primary commodities. Its output of minerals, forest and agricultural products, and fuels represents some 6.2 percent of the country's GDP, while net exports of these items make up about 3.9 percent of GDP. The United States, by contrast, is a smaller producer and a net importer of primary commodities, with output of minerals, forest and agricultural products, and fuels making up some 2.2 percent of its GDP, and net imports of such items amounting to 0.8 percent of GDP. Rises and declines in the prices of primary commodities, then, tend to produce opposite movements in the Canadian and U.S. terms of trade, to which the real exchange rate must then adjust.

The early postwar years saw strong markets for Canada's commodity exports, and world booms in the late 1960s and early 1970s and again in the late 1970s had the same effect. Since then, however, notwithstanding cyclical upswings at times of strong world growth, the secular trend of the prices of commodities produced in Canada

Figure 38: ***U.S. and Canadian Dollar Nominal and Real Exchange Rates, 1976–2003***



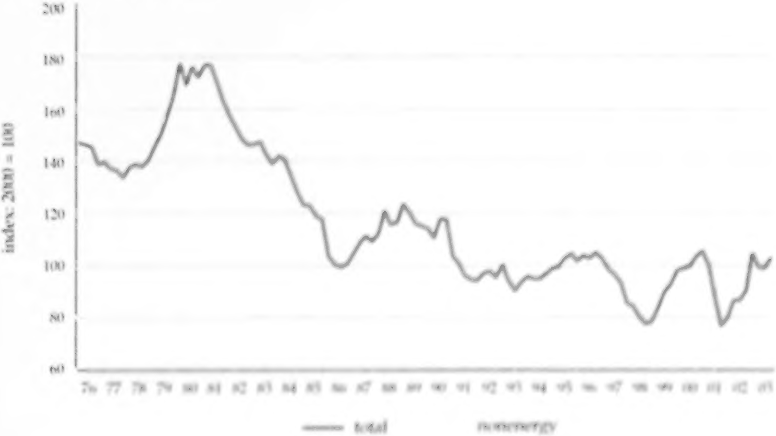
Note: The calculation of the real exchange rate uses GDP price indexes.

Sources: Bank of Canada; Statistics Canada, CANSIM database, table 380-0002; United States, Department of Commerce, Bureau of Economic Analysis; authors' calculations.

has been downward (Figure 39). It should not be surprising that this decline has been associated with a parallel fall in Canada's real exchange rate and — given the behaviour of respective inflation rates in Canada and the United States — in the nominal Canadian-U.S. dollar exchange rate as well.

Canada's relatively poor productivity performance relative to that of the United States may have also made its own contribution to the falling exchange rate. At the very least, the tendency for real exchange rate movements to respond to different productivity growth rates between countries mean that it cannot have helped. In the Canada-U.S. case, however, the differences in overall productivity growth rates have been relatively modest, especially compared to the measurement errors that plague such comparisons, and, perhaps more important, have shown little variation over time, which makes any influence they may have had on the exchange rate hard to detect.

Figure 39: ***Prices of Canadian Commodity Exports in U.S. Dollars, 1976–2002***
(real terms)



Sources: Statistics Canada, CANSIM database, table 176-0001; United States, Department of Commerce, Bureau of Economic Analysis; authors' calculations.

The Role of International Capital Markets

At first sight, it may seem old fashioned to explain the real exchange rate's behaviour with reference to the effects of trade flows while neglecting the role of the capital flows that have expanded so rapidly and attracted so much attention in recent years. Long-term flows of capital into and out of any country, however, are sensitive to relative investment prospects. An economy in which industries in international decline are heavily represented, or whose productivity growth appears to be sluggish, will therefore also suffer on the capital account side. This effect is implicit in the foregoing discussion, but two other capital account influences probably have also been important and require further discussion.

The first of these is the effect of public sector borrowing. The normal presumption, absent fears of default, is that greater public sector borrowing tends to push up the real exchange rate by inducing an inflow of foreign capital, either directly or by crowding out private sector borrowing in the domestic market.[15] This argument suggests that the turnaround in Canada's public finances after 1995, other things being equal, should have had a depressing effect on the exchange rate. But perhaps other things have not remained equal. Many would argue that, by 1995, Canada's high and rising public debt was beginning to undermine the confidence of lenders, and that the potentially supporting effect of capital inflows on the currency was being offset by an increasing discount that reflected a growing risk of default. If that was so, reduced foreign borrowing after 1995 should have restored confidence and boosted the currency. The implication here is that fiscal policy's effects on the exchange rate, though perhaps important, are hard to pin down, and any attempt to account for movements in the Canadian-U.S. dollar real exchange rate with reference to fiscal variables is necessarily highly speculative.[16]

As for short-term capital movements, there seems little doubt that differentials in short-term interest rates between Canada and the United States affect the exchange rate. When rates are relatively high in Canada, this does indeed put upward pressure on the exchange rate (and when they are low, the pressure is downward). Some of this pressure may arise, as we suggested in our discussion in Chapter 3 of the monetary conditions index, from movements in short-term rates that reflect monetary policy actions. A further influence may be expectations of returns conditioned by relative economic growth rates, but this would be hard to identify separately in practice, since increases in economic growth tend to be associated with rises in real interest rate levels. Either way, short-term interest rate differentials should be helpful, at least in a statistical sense, in "explaining" exchange rate movements.

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[15] Fleming (1962) and Mundell (1963) are the classic articles dealing with this topic.

[16] It is worth noting, however, that in the past few years, Bank of Canada research has found what seems to be a systematic influence of relative public-debt-to-GDP ratios on the exchange rate (see Murray, Zelmer, and Antia 2000).

The "Bank of Canada Equation" and its Implications

The foregoing arguments suggest that the Canadian dollar's performance against the U.S. dollar should be explicable largely in terms of inflation differentials, terms-of-trade effects emanating from international commodity markets, and short-term interest rate differentials. They also suggest that, although other factors such as productivity differentials and fiscal policy may well have been at work, systematic evidence of significant and stable links between them and the exchange rate will likely be harder to find.

And so, indeed, seems to have been the case. An econometric equation known as the *Bank of Canada equation*, first developed in the early 1990s, was, until recently, remarkably robust in its ability to track the dollar's performance since the 1970s, even when the predicted values were generated from dynamic forecasts using coefficients estimated from the period prior to the mid-1990s (Robson and Laidler 2002, 9–10). The equation separates prices of fossil fuels from prices of other commodities, and finds that the long-run trend of the real exchange rate is correlated with the latter. It also finds that interest differentials are systematically important.

We show the results of a regression inspired by the Bank of Canada equation in Box 3. Very much in the spirit of the original, it combines a long-run relationship between the levels of the real exchange rate and of commodity prices with a shorter-run influence of interest-rate differentials. Figure 40 shows actual observations for the Canadian-U.S. dollar exchange rate and also fitted values using the coefficients in this equation, converting the real exchange rate predictions back to nominal ones.[17]

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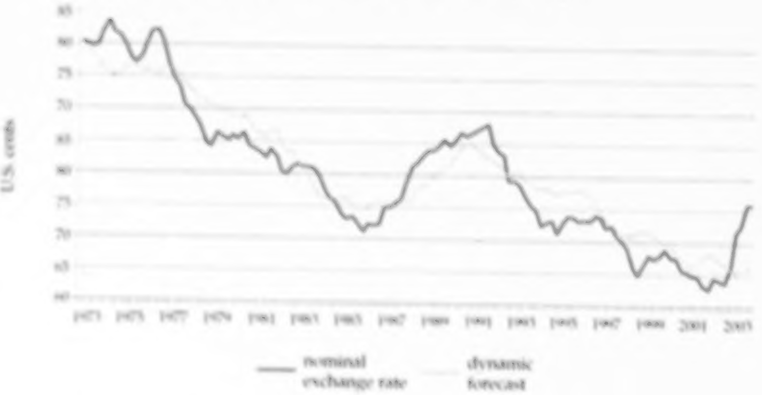
[17] It is worth noting that Bank of Canada researchers do not have a monopoly on investigations of the role of real variables in driving the behaviour of the Canadian exchange rate, nor is the Bank of Canada equation the only one that has been used in empirical work on these issues. Chen and Rogoff (2002) and Carr and Floyd (2002) have also studied such matters using relationships that differ in many details from the Bank of Canada equation, but they also find strong evidence for the importance of terms-of-trade effects on Canada's real exchange rate.

Figure 40: ***Nominal Canadian-U.S. Dollar Exchange Rate and Dynamic Forecast with the Bank of Canada Equation Fitted over the Period 1973:Q1 to 2004:Q1***



Sources: Bank of Canada; authors' calculations.

Anyone who had taken the Bank of Canada equation seriously in 1995 would have found little surprising in the behaviour of the exchange rate through the rest of the decade. Specifically, the equation explained the dollar's strength at the beginning of the decade in terms of the still-present influence of the commodity boom of the late 1980s and of the extremely large interest differentials that prevailed in 1990 and into 1991, and its subsequent decline as the consequence of the disappearance of these two effects. Notably, too, the equation attributed the dollar's decline in the wake of the Asian crisis of 1997–98 to the decline in commodity prices that followed it.

Only in 2003, with the Canadian dollar's sudden 20 percent appreciation against the U.S. dollar, did the original Bank of Canada equation begin to perform badly. Although both commodity prices and the interest differential moved in directions that predicted an appreciation at that time, they gave no warning of the magnitude of that appreciation. More recent versions of the equation, which include debt-to-GDP ratios and allow for the effects of the U.S. dollar's significant depreciation against other currencies, are no more successful in foretelling the extent of the appreciation.

Box 3: *The Bank of Canada Equation and the Canadian Dollar Exchange Rate*

In the early 1990s, research at the Bank of Canada (Amano and van Norden 1995) uncovered a simple equation, which has proved remarkably durable over time, relating movements in the Canadian-U.S. dollar real exchange rate to prices of Canada's principal commodity exports and the difference between Canadian and U.S. short-term interest rates. A very simple version of this equation, estimated with data up to the end of 2003, provides the following statistical "explanation" of the Canadian dollar's monthly movements since 1973.

Original Bank of Canada Equation Estimated over the Period 1973Q1 to 2004Q1

$$\Delta RFX_t = \alpha(RFX_{t-1} - \beta_0 - \beta_1 COM_{t-1} - \beta_2 ENE_{t-1}) + \beta_3 RDIFF_{t-1}$$

Variable	Coefficient	Std. Error	p-value
Adj. Factor (α)	-0.141	0.0331	0.000
Constant	2.837	0.2888	0.000
COM_{t-1}	0.381	0.0549	0.000
ENE_{t-1}	-0.087	0.0391	0.028
$RDIFF_{t-1}$	0.006	0.0014	0.000
R^2	0.1540		
Durbin-Watson	1.1092		
# of observations	124		

RFX is the real Canada-U.S. exchange rate, COM is the non-energy commodity price index deflated by the U.S. GDP deflator, ENE is the energy commodity price index deflated by the U.S. GDP deflator, and RDIFF is the difference between Canadian and U.S. three-month treasury-bill rates. Nominal exchange rates are converted to real ones by multiplying nominal rates by the ratio of the Canadian GDP deflator to that of the United States. Data series for exchange rates, commodity price indices, and Canadian GDP deflators and interest rates are from CANSIM. U.S. interest rates data are from the Federal Reserve and U.S. GDP deflators are from the Bureau of Economic Analysis. All variables are quarterly averages and they are all expressed in logarithms except RDIFF Δ signifies a quarter-to-quarter change.

Time-series econometrics is, of course, littered with equations that eventually ceased to work well, some of them almost as soon as they were estimated, and it is possible that developments since the time of writing will have undermined these statistical associations as well.[18] The peculiarities of Bank-of-Canada-style equations for the Canadian dollar's exchange rate using these variables are notable. For example, when energy prices enter them significantly, they often do so with a counterintuitive negative sign. Moreover, although the dwindling importance of primary commodities in Canadian trade is reflected in smaller coefficients on their prices when such equations are estimated over more recent periods, the change is not statistically significant. Nevertheless, in our view, these equations' robustness over nearly three decades of data puts the burden of proof squarely on those who argue that the decline in Canada's real exchange rate since the 1970s has been the result, not of fundamentals, but of the monetary policy regime, and could have been avoided with no ill effects elsewhere had a fixed nominal exchange rate been in place over the period.

Criticism of the Flexible Exchange Rate

Canada's flexible exchange rate regime has long had its critics, and they increased in number and visibility when anti-inflation policy began to bite around 1990 and the exchange rate moved close to US$0.90. The thrust of the critics' arguments was that the Bank of Canada should abandon its attempt to bring inflation down rapidly, fix the exchange rate at around its purchasing-power-parity value of about US$0.80, then devote monetary and fiscal policy to maintaining it at that level. Not coincidentally, the critics were anxious to see the near-term boost in aggregate demand that the easier monetary policy entailed by such a course would have produced. More recently, and particularly after 1998, there was a revival of arguments in favour of some sort of fixed exchange rate. This time, however, the key complaint was that the exchange rate was "too low" and that its decline had contributed in its own right to Canada's poor economic performance.[19]

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[18] It is almost a truism that econometric relationships fall apart as soon as policymakers seek to exploit them — the history of the Phillips curve and M1 targeting in Canada provide cautionary tales from our own history. Perhaps the Bank of Canada equation owes its relative longevity to the fact that it plays no direct role in policymaking!

The idea that, in the 1990s, the declining dollar hurt Canada's productivity growth — an argument which reverses the direction of causation between productivity growth and the exchange rate implied by the Balassa-Samuelson effect — rests on two potentially complementary foundations. The first of these has it that a flexible exchange rate permits agents in the private and public sectors alike to be lazy in their decisionmaking. The second suggests that a declining exchange rate drives up the price of imported capital goods and deters investment.

The first argument is hard to square with either economic theory or empirical evidence. When applied to the private sector, firms faced with competition from abroad supposedly prefer to shelter behind a declining exchange rate rather than undertake the productivity-enhancing decisions that a fixed exchange rate would force on them, and shift resources out of declining sectors and into rising ones. The fact that the real exchange rate tracks commodity prices lends this view superficial plausibility, but a glance below the surface shows it to be dubious. If the price of, say, coal is falling relative to the price of computers, it makes no difference whether their respective prices are measured in Canadian or U.S. dollars or whether the Canadian dollars are worth US$0.90 or US$0.60. Either way, individuals and firms can increase their rewards by redeploying their labour and capital away from coal mining and into computer production. Even if the declining dollar somehow blinded the management of some coal-mining firms to the signals provided by the market for their product, rival firms and investors would react to the relative price change.

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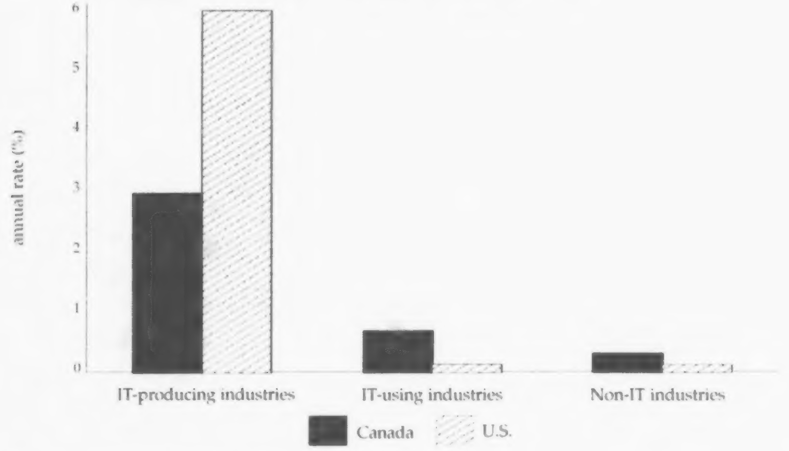
[19] In the early 1990s, many of those who would later argue for fixing the exchange rate on the grounds that the Canadian dollar was undervalued argued for fixing it on the grounds that the currency was overvalued. See Harris (1993) for a particularly cogent exposition of this view.

This theoretical objection gets support from evidence on the pattern of productivity changes in the Canadian economy in the 1990s (as Laidler and Abba 2002 point out). If the declining exchange rate really had numbed managers in the industries affected in this manner, one would expect Canadian productivity to have lagged U.S. productivity in all sectors producing tradable goods — particularly in industries where Canada is a small participant in international markets, with a negligible influence on prices. Such, however, is not the case — Canada's lagging productivity growth *vis-à-vis* the United States in the 1990s was very narrowly concentrated in the two manufacturing sectors of machinery and electrical equipment. Elsewhere — including in the commodity industries that the declining exchange rate is said to have propped up — Canadian firms generally kept pace with, and often outperformed, their U.S. rivals. (Figure 41 contrasts productivity growth of industries that are producers and heavy users of information technology [IT] in the two countries with those that are neither.).

We do not offer this observation to dismiss the potential significance of Canada's lagging performance in one of the leading economic sectors of the late twentieth and early twenty-first centuries, or the possibility that improving it would boost Canadians' future well-being. It is our judgment, however, that changing the exchange rate regime would not have done much to promote that goal either in the past or under current circumstances.

The argument that a flexible exchange rate enabled Canadian policymakers to evade hard decisions also has superficial plausibility — not least because, in the later 1990s, Prime Minister Jean Chrétien frequently cited the benefits of a low dollar in response to criticisms of his government's economic policies. But again, the proposition does not stand up well to closer scrutiny. Critics of a flexible exchange rate can hardly mean that Canadian politicians would have focused more keenly on productivity-enhancing policies if monetary policy had been even tighter than it actually was in the 1990s, as would have been necessary to hold the nominal

Figure 41: ***Multifactor Productivity Growth by Industry, Canada and the United States, 1995–2000***



Source: Ho, Rao, and Tang 2003.

exchange rate up. Monetary policy was, after all, tight enough to hold inflation at or below 2 percent for most of the period from 1993 to 2000. Further stringency would have moved the Canadian economy into deflationary territory — hardly a promising environment in which to undertake the kinds of regulatory and tax reforms the critics have in mind.[20]

In any event, this is also the period when the NAFTA was implemented, discipline was restored to regular government budgets, the Canada and the Quebec Pension Plans were put on a more sustainable footing, and substantial market-oriented modifications were made to the employment insurance program. That more productivity-enhancing policies are still desirable is not in question, but Canadian political processes did, in fact, generate enough discipline to bring about a remarkable improvement in policymaking in the 1990s without a fixed exchange rate, and there is no obvious reason why they should not continue to do so in its continued absence.

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[20] Argentina is an extreme and highly instructive example of a country that tried and failed to impose political discipline through a very tight monetary policy regime underpinned by a commitment to a rigidly fixed exchange rate. The new monetary regime was not accompanied by the necessary fiscal and structural reforms, and the result was a prolonged deflation, leading to stringent restrictions on international trade and, eventually, debt default. For a recent study comparing Canadian and Argentine monetary experiences in the 1990s, see Bodkin and Neder (2003).

If criticism of a flexible exchange rate based on the proposition that it induces laziness among decisionmakers does not stand up to close inspection, the second argument, which focuses on the effects on investment of a rising relative price of imported equipment, merits more respectful attention. The proposition here is that, particularly in the 1990s, the falling exchange rate discouraged Canadian firms from productivity-enhancing capital investments because it raised the price of capital goods — which, in Canada's case, tend to be imported and priced in world markets — relative to domestic labour.

Any assessment of this debate depends in large part on how seriously one takes the proposition that Canada's real exchange rate movements result from real factors independent of the exchange rate regime.

If one takes it seriously, as we do — if, for example, the Bank of Canada equation captured important factors behind the Canadian dollar's movements in the 1990s — then, under a fixed exchange rate, falling world commodity prices would have led to domestic wages and prices that were lower than under a flexible rate, and investment goods would not have been relatively cheaper. Indeed, from 1991 to 1999, a deflation of 2 percent annually would have been required under a fixed rate to achieve the real exchange rate adjustment that occurred during those years.[21] Either the same rise in the relative price of imported investment goods as in fact took place through the dollar's fall would have been brought about by flexibly declining domestic wages and prices, and would have presented the same obstacle to investment, or a degree of wage-price stickiness would have ensured that this alternative adjustment was accompanied by recession and real stagnation, which would have added an extra barrier to investment.

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[21] This number is the result of a calculation using respective national GDP deflators, but a similar calculation using consumer price indexes would point in the same direction.

Only if the dollar's depreciation was unrelated to fundamentals and had occurred gratuitously as a consequence of the workings of the flexible exchange rate regime *per se* would this result not have been the case, and only then would the regime's critics have a coherent analysis of Canada's productivity performance in the 1990s.

Contemplation of the longer-term decline of the exchange rate, however, raises doubts about their story. Notwithstanding that decline, Canada's real exchange rate has experienced periods of relative buoyancy, particularly in the late 1980s and early 1990s. Some observers have noted that this appreciation allowed Canadian firms that were then undertaking capital investments to tool up at bargain prices just as the FTA was taking effect. The same arguments that predict a vicious circle from a declining exchange rate would have predicted a virtuous circle at that point: more capital investment, stronger productivity growth, and further rises in the real exchange rate. Without dismissing out of hand the possibility that problems may arise from within the exchange rate regime itself, we argue that the reversal of this trend after 1991 and the substantial rebound in the Canadian-U.S. real exchange rate in 2003 suggest that such problems are not important enough to produce self-sustaining improvements or deteriorations in economic performance.[22]

All in all, then, we find critiques along the above lines of Canada's flexible exchange rate and the inflation-targeting regime it supports unconvincing. Episodes of the Bank of Canada equation's poor performance notwithstanding, we argue that the burden of proof of arguments for the superiority of a fixed rate regime lies squarely on those who maintain that the Canadian dollar moves in ways that are inconsistent with economic fundamentals, and that Canada would be better off trying to prevent those moves.

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[22] The idea that fixed exchange rates yield better economic outcomes than flexible exchange rates also gets scant support from cross-country investigations. Edwards and Yeyati (2003) find not only that terms-of-trade shocks affect output less in countries with flexible rates, but that long-term growth rates are higher in countries with flexible rates, after controlling for factors such as initial incomes, education, openness, and government spending.

Concluding Comment

This review of the Canadian economy's performance in conditions of low inflation can be summarized as follows. The first-round effects on such indicators as inflation expectations, the length of contracts, and labour relations that low inflation was supposed to produce did indeed materialize in the 1990s. However, the more important second-round effects that were expected on the economy's real performance have been harder to find. Labour market performance improved markedly and capital investment rose, but higher and more rapidly rising productivity — the other factor critical in translating these effects into higher and more rapidly rising living standards — did not materialize on a convincing scale, particularly when comparisons are made with the impressive performance of the United States over the same period.

We argue against ascribing this disappointing outcome to the behaviour of the exchange rate, as some would have it. In our view, it is far more likely that there are difficulties in the Canadian economy beyond the inflationary problems that loomed so large at the beginning of the 1990s. A discussion of these difficulties would take us well beyond the scope of this book, but prominent suspects are high marginal tax rates on returns to labour and business investment, and strong biases in taxation and various transfer programs such as employment insurance that penalize up-and-coming sectors and regions in order to support sectors and regions with poor long-term prospects. Many of these problems have become more apparent in a low-inflation environment, and it is not unreasonable to hope that the clearer view and longer time horizon that low inflation promotes will help Canadians address them more effectively.

8

Issues for the Next Decade

The clear message from Canada's macroeconomic experience over the past decade is that a monetary order based on inflation targets and underpinned by responsible fiscal policy has been working rather well, even though it has not yet, and by itself may never, produce all the productivity gains its more optimistic supporters hoped for at the beginning of the 1990s.

That said, monetary regimes, like other frameworks for economic policy, do evolve as circumstances change and as economic knowledge accumulates. Two broad avenues for the future development of Canadian monetary policy are imaginable at present. One involves replacing the current monetary order altogether with one based on some sort of tie to the U.S. dollar or a common North American currency. The other involves continuing the current independent regime, but with further refinements to the goals and tactics of the Bank of Canada. In this chapter, we look closely at both possibilities.

Options for North American Monetary Integration

In the past five years, there has been an ongoing debate about the desirability of replacing Canada's current monetary order with some form of fixed exchange rate regime tied to the U.S. dollar.[1] Commentators have proposed a range of arrangements running from a simple pegged exchange rate all the way to a European-style North American monetary union in which Canada, the United States, and Mexico would create a new supranational central bank that would then emit a new currency to circulate in all three countries. Motives for these schemes also vary. Some proponents wish to eliminate currency conversion and related frictional costs. Others desire to forestall movements in the Canadian dollar that originate in foreign exchange markets and damage the Canadian economy. Yet others, as we have seen, argue that the current monetary order displays deeper flaws than these, and that independently set targets for domestic inflation supported by a flexible exchange rate lead to behaviour by both government and the private sector that impose intolerable costs on Canadians.

Since experience over the 1990–2003 period shows that independent inflation targets are possible and that improvements in labour market performance and financial markets have accompanied their successful pursuit, and since real factors seem to play an important role in the exchange rate's movements, we are inclined to think these last criticisms are overblown. If there is a credible case for a wholesale replacement of the current monetary order, it must be made on the basis that it would lead to benefits to Canada's economic performance over and above those that the current order yields.[2]

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[1] Notable contributions to this debate are Courchene and Harris (1999) and Grubel (1999). These proposals have also found favour among some economists working in the financial services sector — for example, Cooper (2001). These critics tend not to direct their arguments directly at the inflation-targeting regime. Rather, they tend to treat the whole period since 1970, when the Canadian dollar's peg against the U.S. dollar was abandoned, as a single floating rate episode, not withstanding the fact that the Bank of Canada's approach to the dollar and its domestic targets changed profoundly over those three decades. Defenders of the current regime, by contrast, start from the proposition that inflation targets require a flexible exchange rate, and see the pertinent choice, not as between a fixed or a flexible exchange rate, but as between a fixed exchange rate or inflation targets as goals for monetary policy.

[2] The following section draws heavily on Robson and Laidler (2002).

A separate national currency undoubtedly has drawbacks. At present, all Canadians engaged in foreign transactions bear currency conversion costs. Given that time elapses between the initiation and completion of such transactions, they must also either bear the risk that the exchange rate might change in the intervening period or incur the costs of hedging against it. These drawbacks, however, must be weighed against the capacity of a flexible exchange rate regime to buffer an economy that is enjoying low and stable inflation from real shocks emanating from the world economy. Any fixed exchange rate or common currency regime would expose the domestic economy to greater instability than it currently experiences, perhaps on a scale large enough to make the regime sufficiently unpopular politically as to threaten its survival. And any mistake made at the outset of such a regime about the appropriate exchange rate at which to enter such an arrangement would exacerbate these problems.

Pegged Exchange Rates and Legislated Fixes

As we explained in Chapter 3, any fixed exchange rate scheme that preserved the Canadian dollar as a separate currency would require the Bank of Canada to exchange domestic for foreign money to stabilize the dollar's relative price, which would create extra volatility in the domestic money supply and, hence, in short-term interest rates.

For people who rate the objective of reducing currency conversion costs highly, schemes that preserve the Canadian dollar are unattractive in the first place, since the need to convert money would not disappear under them. Such regimes, moreover, would reduce costs associated with exchange rate risk only to the extent that the fixed value of the exchange rate was credible. The simplest type of fix would see the minister of finance exercise his powers under the *Bank of Canada Act* to order the Bank henceforth to stabilize the exchange rate. This course would be the least effective in reducing exchange rate risk, however, because it could easily be reversed should the fix begin to impose painful constraints on the pursuit of other policy goals — and since any fixed exchange rate increases the likelihood of domestic monetary instability, such problems would be virtually certain to arise sooner or later.

A legislated value for the exchange rate, enshrined, for example, in an amended *Bank of Canada Act*, could be a more durable and credible arrangement. Its durability and credibility would be greater yet if the Bank operated like a currency board, emitting only as much high-powered money as its reserves of foreign exchange could back at the fixed rate. Even in that case, however, the chance would always remain that shocks emanating from international markets or inconsistent fiscal policies would generate enough domestic distress that legislators would begin to contemplate overriding the fix. Once that option was known to be under consideration, foreign exchange traders would begin to speculate on a change. If the change in question were a devaluation, as is usually the case in such circumstances, the resulting drain of foreign exchange reserves and the consequent need to reduce the stock of high-powered money in the domestic economy would increase the distress. This, in broad outline, is what happened when Argentina fixed its currency to the U.S. dollar in 2001; that example has done much to undermine confidence in the durability of legislated fixed exchange rate arrangements.[3]

All in all, it is hard to see what economic advantages Canada would gain from adopting any kind of fixed exchange rate system that maintained the existence of the Canadian dollar as a separate currency. About the only thing one can say in favour of such an arrangement is that its political feasibility is unquestionable, for the simple reason that the federal government could put it in place unilaterally, without the need for negotiations with the United States.

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[3] Argentina's problems were admittedly unique in important respects. First, the country conspicuously failed to come to grips with its fiscal problems in the 1990s. Second, although its fix was to the U.S. dollar, a currency in which most of its foreign debts were denominated, most of its trade was with the rest of Latin America and Europe, which meant that the U.S. dollar's rapid appreciation in the late 1990s created acute competitiveness problems for Argentina. But every collapse of a fixed exchange rate arrangement has its unique elements. What was conspicuously not unique to Argentina was the fact of collapse itself.

Unilateral Dollarization

Ottawa could also decide unilaterally to abolish the Canadian dollar and adopt the U.S. dollar as Canada's domestic currency. Indeed, when debates about Canada's international monetary arrangements were at their height, some commentators — for example, Cooper (2001) — argued for just such a step on the grounds that market mechanisms would, in any event, soon cause the Canadian dollar to disappear as Canadian households and firms voluntarily started using U.S. dollars in setting prices and conducting transactions, a process known as *voluntary dollarization*. It would make sense, the argument went, for the Canadian monetary authorities to pre-empt this trend and eliminate the domestic currency while the exchange rate remained above US$0.60, rather than await further and inevitable depreciation.

Examination by Bank of Canada researchers (Murray and Powell 2002) on the extent of voluntary dollarization showed, however, that fears of the currency's likely spontaneous disappearance were grossly exaggerated. Although the proportion of bank deposits denominated in foreign currencies (predominantly U.S. dollars) held worldwide by Canadians had risen from around 4 percent to close to 10 percent during the 1990s, it had been even a little higher in the mid-1980s and was still well below the 15.4 percent held by U.K. residents. Moreover, although 53 percent of Canadian firms surveyed by the Bank of Canada set their export prices in U.S. dollars, only 6 percent set their domestic prices exclusively in U.S. dollars, while 82 percent prepared and published their financial statements exclusively in Canadian dollars.

These results were consistent with what empirical evidence drawn from other times and places, as well as economic theory, would lead one to expect. Currencies have sometimes almost vanished from domestic circulation, to be replaced by foreign counterparts, but only under the conditions of extreme *domestic* financial instability that accompany hyperinflation. The phenomenon has never occurred in response to exchange rate fluctuations when the domestic monetary system was stable. Domestic currencies persist in less than extreme domestic circumstances mainly because powerful forces sustain them once they are in use. The use of money as a means of exchange and unit of account creates what economists call *network externalities* — meaning that a single individual cannot unilaterally decide to abandon the currency currently in use, but must do so in concert with every other party with which he or she exchanges goods, services, and financial and pricing information. Moreover, these externalities are usually supported by legal restrictions, often involving accounting and tax rules that require the use of domestic currency in reporting and payment.

Except in extreme circumstances, then, it would take an explicit decision on the part of the federal government to replace Canada's currency with the U.S. dollar. Unilateral dollarization, even if it took legislation to bring it about, would certainly have the great and obvious advantage of eliminating transactions costs in the foreign exchange market, and all exchange rate risks, too. Unfortunately, it would also have significant drawbacks, even relative to a pegged exchange rate and certainly relative to Canada's current monetary order.

To begin with, replacing the Canadian dollar with the U.S. dollar would require replacing the current stock of notes and coin in circulation in Canada. If Canada undertook this substitution unilaterally, the federal government would need to buy the required U.S. currency. At the time of writing, such a task would cost about $45 billion and, if financed by government borrowing at the current effective debt-servicing rate, would impose an annual interest cost of $2.7 billion. This sum is not trivial. We have estimated (Robson and Laidler 2002, 3–4) the annual cost of Canadian-U.S. dollar exchange transactions at some 0.26 percent of gross domestic product, which amounts to about $3.3 billion in 2004 dollars. Even if the savings from eliminating that cost accrued entirely to Canadians, the annual interest cost implicit in borrowing to replace Canadian dollars in domestic circulation with U.S. dollars would eat up more than four-fifths of those savings.[4] In addition, the cost of replacing one currency with the other is only a portion of the total, since households and firms would need to bear the once-and-for-all costs of such operations as redenominating bank accounts, mortgages, and other contracts in U.S. dollars, changing price tags, and replacing machines that dispense and accept coins and banknotes.

As we pointed out in Chapter 2, moreover, the Bank of Canada is the ultimate source of liquidity to Canada's banking system and underpins domestic financial stability in its capacity as lender of last resort. At present, its ability to play this role arises from its capacity to create Canadian dollars in unlimited amounts virtually instantaneously. Under dollarization, the Bank would be able to provide U.S. dollar liabilities to the banking system, but it would have to hold U.S. dollar reserves to back them. Its power to act as a lender of last resort in emergencies would be limited, therefore, since only the U.S. Federal Reserve can create U.S. dollars at will. Canadian banks that desired access to emergency support would therefore probably want to open up direct lines of credit with U.S. institutions, which would raise their operating costs — costs they could avoid by becoming subsidiaries or branches of U.S. institutions, with better access to central banking services from the Fed, or by migrating to the United States altogether.

Canada's unilaterally adopting the U.S. dollar would also strip the Bank of Canada of its power to make monetary policy. From the point of view of monetary mechanics, Canada's position in the resulting currency area would then be the same as that of individual U.S. states. The quantity of money in Canada would depend on the interaction of domestic demand and the stance of the U.S. Federal Reserve. The behaviour of interest rates, aggregate demand, and prices in Canada would be local variations on the pattern set for the currency area as a whole.

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[4] This interest cost would exist notwithstanding the fact that Canada's foreign exchange reserves are adequate to finance the purchase. Holdings of U.S. government treasury bills in the foreign exchange account yield interest, so replacing them with U.S. currency — a non-interest-bearing liability of the U.S. government — would mean giving up that income.

There would, however, be a key political difference between a dollarized Canada and a U.S. state. As we saw in Chapter 4, Canada's monetary policy goals are jointly set by the Bank of Canada and the federal government, both of which are accountable to the Canadian electorate through a variety of institutional arrangements. Under unilateral dollarization, monetary policy for Canada would be made by the Fed — whose officers are appointed by the U.S. government to conduct monetary policy in the interest of the United States and its electorate, to whom they would remain accountable. The Fed would have no obligation to take Canadian interests into account in any of its actions or to explain those actions to the Canadian public. In any circumstances where the interests of the U.S. and Canadian public were in conflict, furthermore, the Fed's legal obligation would be to act solely in the interests of the former.

It is hard to resist the conclusion that the economic and political costs of unilateral dollarization make it an unattractive option for Canada. Countries that have legislated the U.S. dollar as their domestic currency — Liberia, Panama, and, more recently, Ecuador, El Salvador, and Guatemala — are small, with poorly developed financial systems, and their histories of political and economic instability have made it extremely difficult for them to create and sustain stable domestic monetary orders of their own. Canada is not such a country.

A Negotiated North American Monetary Union

The stable and successful countries of western Europe, in their development of a monetary union based on a common currency and common central bank, provide an example of a different approach to these matters. If unilateral dollarization is not an attractive option for Canada, what about membership in a negotiated North American monetary union (NAMU)?

The drawbacks of the unilateral option provide a helpful guide to what Canada might seek in such an arrangement: some help with the cost of replacing Canadian with U.S. dollars, access for Canadian banks to the services of a central bank on the same terms as their U.S. counterparts, and a meaningful say in the conduct of monetary policy by a central bank with a mandate to serve the interests, not of just one member of the monetary union, but of the area as a whole.

Awkwardly, however, meaningful Canadian influence in the governance of a North American central bank — whether a redesigned Fed or a newly created entity — would be attractive to Canada in rough proportion to its unattractiveness to the United States. Western European nations, for good and well-known historical reasons, are engaged in a major project of political integration, part of which is the creation of a common currency and the European System of Central Banks (ESCB) overseen by the European Central Bank (ECB). No such political imperatives are at work in North America, so it is hardly surprising that the United States has shown no interest in any kind of NAMU. In 1999, Laurence Summers, then under-secretary of the U.S. Treasury, addressing questions concerning dollarization in Latin America, remarked:

> [T]here are certain limits on the steps that the United States would be willing to take in the context of [another country's decision to dollarize]. Specifically, it would not, in our judgment, be appropriate for the United States authorities to extend the net of bank supervision, to provide access to the Federal Reserve discount window, or to adjust bank supervisory responsibilities or the procedures or orientation of US monetary policy in light of another country deciding to adopt the dollar. (Summers 1999.)

Among the items that would make a negotiated monetary union with the United States a practical proposition for Canada, the only one Summers did not not explicitly rule out is some form of seigniorage sharing.

Summers made his statement in his capacity as an official of an administration now no longer in office and in the context of Argentina's proposed dollarization, not in that of a possible NAMU. Some time has passed since then, a new administration is in office, Canada is of much more economic importance to the United States than is Argentina, and its economy is more deeply integrated with that of the United States. Even so, there is no reason to believe that U.S. jealousy of its sovereignty in monetary matters — or in any other policy sphere — has weakened since 1999; indeed, it would likely prove an insuperable barrier to any kind of negotiated monetary union.

We conclude, therefore, that the options that exist to replace Canada's current monetary order with an alternative based on the U.S. dollar are either politically feasible but economically unattractive, or economically attractive but politically unfeasible. Nor is this state of affairs likely to change much in the next decade. We return to these matters below in our discussion of the longer-term prospects for the North American economy. As far as Canadian monetary policy over the medium term goes, however, the relevant issues involve improving the current monetary order, not replacing it.

Fine Tuning the Current Monetary Order

The centrepiece of Canada's current monetary order is a target rate for inflation, as measured by changes in the consumer price index (CPI), of 2 percent annually, with an acceptable range of variation of between 1 and 3 percent around this central target.

As we have seen, at the inception of inflation targets in 1991, the stress was on the two percentage point range rather than on its central value, but this emphasis has since shifted. Currently, the prospect of an inflation rate systematically above 2 percent can be expected to provoke a contractionary response by the Bank of Canada, and of an inflation rate systematically below 2 percent can be expected to provoke an expansionary response. Earlier, by contrast, it was not always clear that these reactions would ensue as long as inflation looked likely to stay inside the target range.

This shift in emphasis by the Bank of Canada is not the only change from the goals envisaged when targets first came into force. Then, the 1-to-3 percent range was simply a way station to be achieved by the end of 1995 on the path to "price stability," which the Bank provisionally identified as an inflation rate of "clearly less than 2 percent." The transformation of an interim target into what now looks like a permanent feature of the regime began with the Liberal election victory in 1993 and Bank of Canada Governor Crow's withdrawal of his candidacy for reappointment to a second term of office.

Inflation Targets and Price-Level Targets

In the run-up to the second renewal of Canada's inflation targets, some economists (notably Fortin 1996), advocated shifting up the target range by a percentage point, to 2-to-4 percent, to avoid unemployment effects created by wage stickiness. Subsequent research (such as Hogan 1998; Crawford 2001a; and Crawford and Wright 2001) cast doubt on the importance of this effect, and the case was further weakened by the subsequent improvement in the performance of Canada's labour market. At the same time, however, concern that the effect might become more important at lower inflation rates also weakened the contrary case for lowering the target, as Parkin (1997, 2000) and Crow (2002), among others, had advocated. Even so — and notwithstanding the effective political consensus that has evidently formed around it — a 1-to-3-percent CPI inflation target with a central tendency of 2 percent leaves something to be desired. It may be a satisfactory quantification of "low inflation," but not, surely, of "price stability."

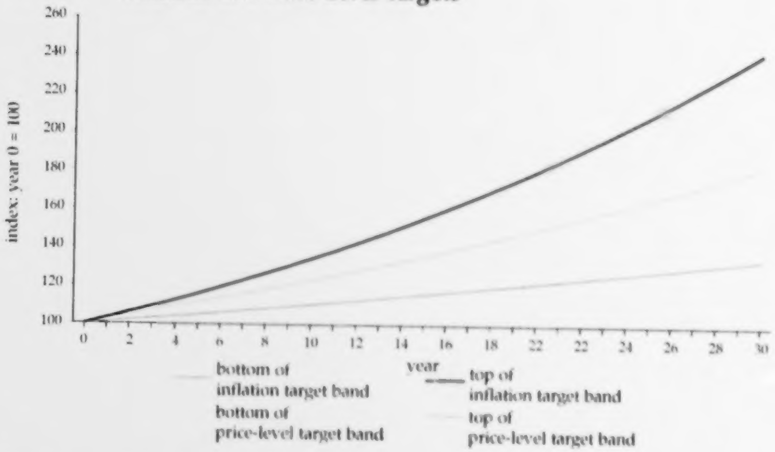
The CPI is admittedly an imperfect measure of the price level. It is subject to biases that arise from the appearance of new goods and to quality improvements in existing goods that Statistics Canada surveys do not capture, not to mention the introduction of new goods into the index only after substantial price declines. Because it is a fixed-weight index that gets rebased at infrequent intervals (currently five years), the CPI also fails to capture fully the tendency of consumers to substitute items whose relative prices fall for those whose relative prices rise, leaving the latter overweighted, and the former underweighted, in the index. While these factors bias CPI inflation upward, however, the best estimates of this bias put it at about 0.5 — and almost certainly no more than 0.7 — of a percentage point annually (Crawford 1998).

Furthermore, over a period of 30 years — not an unusual length for contracts to borrow money or for retirement planning — and allowing for a half percentage point annual bias in the CPI, a measured inflation rate of 2 percent would reduce the purchasing power of money by almost two-thirds. If price stability is indeed the goal of monetary policy, then it is hard to see how the target for CPI inflation could be any higher than 1 percent annually, at a rather generous maximum. There can be no denying, therefore, that the Bank of Canada compromised this goal in 1993, as Crow (2002) has pointed out, and then completely abandoned it somewhere along the way in subsequent years, as a target inflation rate of 2 percent became a settled feature of the economic landscape.

The use of year-over-year inflation as the target raises another concern: "base drift." Other types of economic and financial targets — for government spending, say, or for multiyear wage contracts — would be seen as unsatisfactory if they regularly rebased the target, taking whatever the current result happened to be as the starting point for the next period. Yet this is exactly what an inflation target based on an annual inflation rate does with respect to price-level behaviour.

To be more precise, a target that specified a 2 percent *annual average increase in the price level* would differ from one specifying a 2 percent *annual inflation rate* in its implications for action in the event that the target were missed. Suppose, for example, that, starting from a point on the desired path for the price level, the central bank allowed inflation to run at 3, rather than 2, percent for a year. In that case, a regime based on a target path for the price level would require that inflation in the subsequent year be held (ignoring a trivial adjustment from compounding) to 1 percent over one year, or 1.5 percent over two years. An inflation target would require only that inflation return to 2 percent. A target path for the price level, that is to say, requires unwinding past errors, while an inflation target only requires not repeating them.

Figure 42: ***Price-Level Expectations under Inflation and Price-Level Targets***

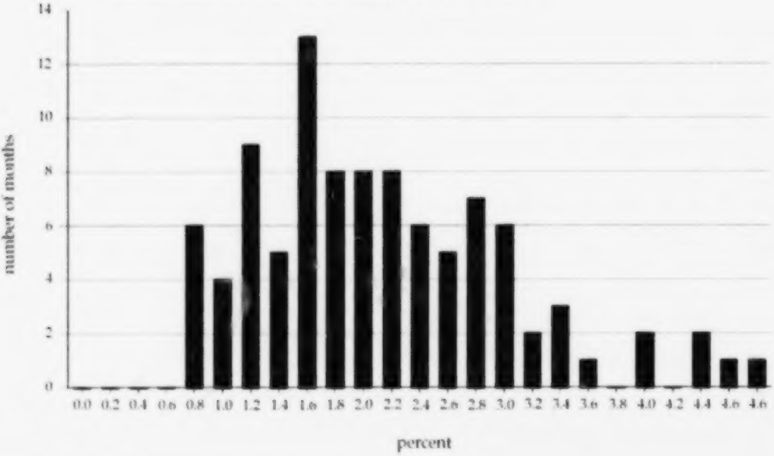


Note: Both inflation and price-level targets have one-percentage-point error bands.

Source: Authors' calculations.

The upshot is that inflation targeting provides less certainty about the path of the price level, particularly over longer periods, than does price-level targeting, as Figure 42 illustrates. The upper bound of price changes shown in the figure is statistically rather unlikely — one ought to expect annual inflation rates to be clustered around the centre of the target band or more evenly distributed within it, rather than consistently at the top of the band. Observers who are cynical about government's inflationary tendencies and interpretation of policy rules might nevertheless see this distribution as likelier than the kind one would expect if prices rose, on average, by exactly 2 percent annually. The actual distribution of 12-month inflation rates since the 2 percent target came into effect at the end of 1995 is shown in Figure 43. Again from a statistical point of view, this distribution is not obviously different from a distribution centred on 2 percent, but skeptics would view its skew to the right as evidence that, over time, any drift in the price level away from a 2 percent annual average increase would likely be in an upward direction.

Figure 43: ***Distribution of 12-Month CPI Inflation Rates, Canada, 1995–2003***



Note: The 0.8 bin includes observations larger than 0.6, up to and including 0.8, and so on.

Sources: Statistics Canada, CANSIM database, table 326-0001; authors' calculations.

If the policy goal were to establish price stability, the current regime would require two changes. First, the target should set a time path for the *level*, rather than the annual rate of change, of the CPI (see Parkin 1997, 2000). Second, the permissible average inflation rate should be lower than it now is — centred on, say, 1 percent if one is willing to countenance a relatively generous estimate of the CPI's bias. Against such changes, we admit the possibility that aiming for a positive, as opposed to zero, inflation rate could reduce the risk of running into the labour market problems discussed earlier. As for the price-level targeting, the requirement to undo past errors would seem undesirable to anyone who wished to avoid adverse consequences for output and employment following a positive shock to prices. And it can be argued that to combine such a requirement with a very low average inflation goal would put the economy at risk of falling into deflation, given an unlucky combination of shocks.

Such criticisms are, however, not altogether compelling for the following reasons. First, settling for low inflation, rather than eliminating it altogether, leaves an unjustifiable residual amount of inefficiency in the workings of the economy. Second, the labour market would be unlikely to behave independently of the monetary policy regime: under a credible price-stability regime, the rigidities that appeared likely to boost unemployment at low rates of inflation might well disappear. A deflationary spiral, moreover, is a special circumstance in which the purchasing power of non-interest-bearing money does not just rise, but rises sufficiently quickly, and is expected to continue rising sufficiently quickly, that no alternative store of value offers a superior return — a circumstance that a central bank with credible price-level-related targets and a modicum of operating expertise would seek, and should be able, to prevent.

All in all, then, we favour the price stability option. If the monetary policy regime were pushed further toward that goal by the time targets are renegotiated in 2006, we would welcome such a development. We recognize, however, that Canadians have now experienced low inflation for more than a decade, and that they now realize that it is a desirable target in its own right. Perhaps 2 percent CPI inflation is "close enough for government work."[5] Given the scarcity of resources and energy to bring about policy regime changes in any field, and that Canada faces many other challenges in its quest for growing long-term prosperity, perhaps the particular cause of price level stability does not deserve a high priority, attractive though it may be when considered in isolation.

Amending the Bank of Canada Act

The goals of monetary policy are clearer now than they were at the beginning of the 1990s, and the Bank of Canada's operations are more transparent, too. Commendable though this greater clarity is, the absence of definitions of either the goals or the operations of monetary policy in the Bank's governing legislation remains troubling. Its goals and methods are now so different from those of the 1930s that a good case exists for rewriting at least the preamble of the *Bank of Canada Act* — and perhaps some of its substantive provisions as well — so that it reflects more closely the Bank's abilities and what contemporary Parliament now requires of it.

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[5] A phrase whose application to this situation we owe to Lloyd Atkinson.

Some commentators (for example, Crow 2002) would amend the act to move the Bank's mandate to pursue price stability closer to that granted to the European Central Bank (ECB) by the Maastricht Treaty. We would not go that far. The Maastricht Treaty leaves it to the ECB to quantify price stability; in Canada, such a change would profoundly affect the current division of responsibilities for the conduct of monetary policy, whereby inflation targets are decided jointly by the Bank of Canada and the minister of finance. We agree with Crow, however, that, in such a situation, the Bank would be able to explain carefully the arguments underlying its choice of a quantitative policy goal, which would be preferable to the Bank and the minister secretly negotiating and then announcing a target, as they now do, without either of them having to explain how the value was chosen. We also suspect that our preferences for a target stated in terms of the price level and specifying a slower rate of price increase would be more likely to be adopted if the design of the targets were solely in the Bank's hands. Even so, and crucially, we also believe that the principles of democratic accountability are best served by continuing to give a government that is responsible to the electorate a direct say in choosing the goals of monetary policy.

We thus favour amending the *Bank of Canada Act*'s preamble to reflect the now-common view that the price level is the only variable that monetary policy can influence in the long run, and that low and stable inflation is conducive to good economic performance on the real side. Perhaps the preamble could be reworded along the lines of

> to ensure stability in the purchasing power of the currency and to promote confidence that such stability will continue, the definition of stability will be decided jointly by the Minister of Finance and the Governor of the Bank of Canada.

But the risks of reopening legislation in a policy area where recent performance has been so satisfactory, and the more pressing economic policy challenges that Canada faces, make us hesitate to urge it as a top priority at the moment. For now, periodically confronting the elected government with the question "what inflation rate do you want?" seems to us eminently sensible. It refers to a goal in respect of which monetary policy has unique and undoubted power. And it tends toward a straightforward and easily monitored answer. In economic policy, those are not small advantages.

An Informational Issue in the Implementation of Policy

In the first half of the 1990s, the Bank of Canada often undershot its assigned targets; since 1995, its accuracy has increased markedly. The Bank also began the 1990s as an object of considerable political controversy and criticism. Now, although its actions still attract attention and comment, the Bank probably enjoys as much public respect and support as at any time in its history. It would thus be hard to argue that the current implementation of policy needs any radical overhaul.

The Bank's own success has nevertheless created one technical problem that is worth discussing. As we saw in Chapters 3 and 6, the Bank manipulates day-to-day interest rates to influence future inflation by way of a transmission mechanism in which the output gap — the deviation of output from the long-run level consistent with stable inflation — plays a critical role. Early in the 1990s, when monetary policy was deployed to reduce inflation and then hold it down in the face of inflation expectations that remained stubbornly high, this gap needed to remain negative. Even at that time, its actual size was a matter of controversy, though its sign was not.

Now, however, with inflation targets credibly entrenched and unemployment rates reduced to levels not seen since the 1970s, even the sign of the output gap at any moment has become difficult to assess. Although the Canadian economy's return to something close to full employment of its resources is obviously and unequivocally welcome, the now-normal uncertainty this return has created about where the economy is operating relative to its stable inflation level of output is a problem for monetary policy. If the sign of the output gap is open to doubt, then so is even the direction in which policy must move to keep inflation on track.

One response would be to give more weight to other intermediate indicators of the thrust of monetary policy — notably, the monetary aggregates. The growth rate of M1 and, more specifically, the growth of M1 relative to factors likely to influence the demand for it (the M1 gap) has tended to give leading information about the direction of aggregate demand and, ultimately, of inflation. The broader aggregates M2, M2+, and M2++ are also good coincident indicators of aggregate demand and, given the relatively quick availability of information about them compared to measures of spending and output, are useful leading indicators of inflation as well (Longworth 2003).

The Bank of Canada currently uses information contained in these and other monetary aggregates as a supplementary input into the policy formation process. Its willingness to place great weight on their behaviour, however, is tempered by evidence of instability in the relationships between the monetary aggregates, particularly M1, and other key indicators at various times in the past, including in the late 1990s.[6] The sources of the problem, as we argued in Chapter 6, were the disappearance of reserve requirements and the restructuring of banks and investment dealers, both of which caused shifts in the demand functions for various types of bank liabilities. Such demand shifts are evidently not rare, and though their effects can usually be interpreted in retrospect, they are very difficult to forecast, and hard to pin down when they are under way.

To urge care in interpreting the behaviour of money is not, however, to suggest ignoring it. The fact that institutional factors change the demand for money from time to time does not mean that the interaction of the supply and demand for money is irrelevant for the transmission of monetary policy, only that the behaviour of the stock of a particular measure of money is more difficult to interpret for policy purposes than it was thought to be at one time. Even so, there is no quick fix for the problems posed by the effects of institutional change on monetary aggregates. The best that can be done is to monitor the banking system for signs of such developments as and when they occur, and to take account of them as best as can be done.

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[6] These issues are thoroughly aired in 1999 conference proceedings published by the Bank of Canada (2000). On the narrow aggregates, see Aubrey and Nott (2000); on the broad aggregates, see McPhail (2000).

The behaviour of certain asset prices — that of housing, for example, and perhaps of equities, too — may also convey useful information about the stance of monetary policy when the economy is in the region of full employment. To the extent that incipient bubbles in the markets for such assets provide an early warning that monetary policy is taking an inflationary turn, a case exists for policy reacting to them. The difficulties here, however, are that asset-price bubbles are easier to distinguish from normal adjustments in relative prices with benefit of hindsight than before the event, and that paying attention to asset prices can easily — as we noted above with respect to the exchange rate — shade into adjusting monetary policy with a view to influencing them.

Some commentators would welcome such a shift, arguing that financial instability is a problem in its own right that is not totally eliminated simply by achieving stability in the price level.[7] We accept the latter premise, but we note that problems in financial markets are sometimes associated with instability in investment expenditures that has deep roots in the workings of the market economy; we therefore hesitate to accept the conclusion. In the current state of knowledge, we fear that the task of dealing with these problems while simultaneously keeping the inflation rate on an even keel might be beyond the powers of monetary policy, and that to attempt it might be to take a small but definite step in the direction of the kind of monetary fine tuning that came so badly to grief in the 1970s.

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[7] The Bank for International Settlements has been particularly forceful in pressing these issues. See, for example, Borio and Lowe (2002); Borio and White (2003); and Crockett (2003) for a representative sample of the literature emanating from this institution. See Laidler (2004) for a recent discussion of some of these issues in a specifically Canadian context.

If there is no magic bullet currently in prospect that will help the Bank of Canada hit its inflation targets more accurately over the next decade, it bears repeating that the difficulty of improving on the current framework arises in large part from its success. The need for other indicators of the stance of policy would be less acute if the economy were not now operating so close to its stable inflation level of capacity that even the sign, let alone the size, of the output gap is often hard to assess. Moreover, the Bank of Canada's success in establishing the credibility of its inflation targets is now providing a firm anchor for inflation expectations in the private sector, as the evidence presented in Chapter 7 suggests, so policy errors arising from difficulties in assessing the state of excess demand or supply in the economy should have more muted effects than they did when the policy regime was untried.

This consideration does, however, suggest an enhanced role for evidence on the state of inflation expectations in the formulation of policy. It is interesting in this regard to note that the sharp, albeit brief tightening of policy that took place in early 2003 seems to have been prompted in part by a rise in measures of expected inflation as well as by the behaviour of the inflation rate itself. Overall, then, while the scope for policy errors may be greater now than it once was, the effects of such errors on the inflation rate are likely to be smaller and slower to materialize than they were. There is, therefore, no reason to believe that inflation targeting will, on balance, be any harder to achieve in the next decade than it was in the last.

North American Integration and Canada's Monetary Order in the Longer Term

Finally, let us acknowledge that the trend toward wider and deeper ties of trade, investment, and migration among countries in general, and among those of North America in particular, may change the balance of costs and benefits surrounding Canada's choice of monetary regime. As cross-border flows of goods, services, capital, and people become easier, the frictions arising from Canada's having a separate currency will loom larger and the economic drawbacks that its nonintegrated economy poses to monetary union will become less salient.

The key unknown here is whether international ties will become so strong that Canadians become willing to cede control over monetary policy and central banking services to a foreign or supranational agency and, just as important, whether Americans become willing to contemplate the compromises necessary to accommodate Canadian interests in a common currency scheme. If these developments occur, and if such a scheme can provide as solid a guarantee of stable purchasing power for the money Canadians use and of the soundness of the banks they rely on as does the current monetary order, then a common North American currency may become Canadians' preferred choice. Should this come about, however, the attractions of such a scheme will stem not from its appearing to be a means of rescuing Canada from an intolerable monetary situation, but from its offering a "trade-up" from arrangements that are performing well.

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Concluding Remarks

We trust that readers who have stayed with us to this point will agree that the story of Canadian monetary policy since 1990 is interesting in its own right — especially to Canadians who lived through it. More important, it provides a number of simple but important lessons about the goals and tactics of monetary policy, many of which are pertinent to key questions Canadians will face in the future.

Monetary Policy Matters

Perhaps the best place to start is where we began: with the simple message that monetary policy matters. During the 1990s, Canada's experience demonstrated not only that monetary policy has powerful short-run effects on output and employment, but also that a medium-sized country intimately linked to the world economy nevertheless can chart its own course for inflation. The international environment and the tactics employed in setting that course can make the journey more or less direct and the ride more or less bumpy, but a determined central bank with the necessary political support can undertake it successfully.

Monetary Policy's Powers Are Limited

The power central banks have over prices and key financial variables such as the exchange rate has made central banking a public sector activity in the major democracies for the better part of a century. Canada's approach to central banking is, in many respects, typical of that found in most of those countries: the Bank of Canada's dominant position in the market for day-to-day funds gives it much influence over short-term interest rates and the growth of money and credit in the economy, as well as the power to act as lender of last resort, with the responsibilities for financial system stability that go with it.

The manner in which the Bank deploys its powers is thus consistent with what mainstream economic thinking says monetary policy can do. Even though, in the short and medium term, monetary policy's influence over the economic cycle creates a nice complementarity between targeting inflation and smoothing aggregate demand, time lags and uncertain information make a more aggressive program of countercyclical monetary policy unpromising. In the long run, money's influence over aggregate demand and aggregate supply is likely limited to the long-run effects that different rates of inflation produce through their effects on the efficiency of markets for goods and services, labour, and saving and investment.

Monetary Policy Is Political

Canadian practice also seems to have evolved toward a healthier set of links between the central bank and the elected national government during the 1990s. The interaction between lax fiscal policy and tight monetary policy created painful tension at the beginning of the decade, with high real short-term interest rates reflecting their conflicting pressures on aggregate demand, and high real long-term interest rates reflecting widespread skepticism that low inflation was sustainable in the face of an unrelenting build-up of public debt. By the end of the decade, federal budget surpluses and easier monetary policy had created a far more congenial macroeconomic environment.

Reinforcing this beneficial trend were institutional developments, beginning with the establishment of inflation targets and continuing with the Bank of Canada's move to more frequent and complete statements of its intentions. These changes bolstered the transparency and credibility of the low-inflation regime, and clarified the division of responsibility between elected politicians and the Bank for monetary policy.

Summing Up

Our overall assessment is, thus, that the monetary area has provided one of the signal successes of Canadian economic policy in recent years. While the hoped-for gains in the level and growth rate of Canadian real incomes have been slow to emerge, many financial and real indicators suggest that lower inflation has brought benefits. Certainly, we detect a diminution of the dissatisfaction that was widespread during the early years of the inflation-targeting regime, and no enthusiasm for raising or eliminating the targets. Despite our preference for targets expressed in terms of the price level itself and for permitting smaller average annual increases, we see the existing regime as sufficiently beneficial and robust that the near-term attention of economic policy reformers can best be directed elsewhere.

The economic and political successes of the "2 percent era" also provide a powerful argument that sacrificing the existing monetary order, with its twin pillars of inflation targets and a flexible exchange rate, in favour of another order centred on some kind of fixed exchange rate regime, would be, at the very least, premature. A pegged exchange rate is an unhappy and almost certainly unsustainable compromise, while a full-blown monetary union with the United States is not feasible on terms that would be attractive to Canadians. Although we cannot rule out the possibility that increasing economic and political integration in North America will change this balance in the years to come, we are satisfied that, in the interim, the monetary order Canadians now have serves them well.

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John Crow
Economic consultant, author, corporate director,
Senior Fellow at the C.D. Howe Institute,
and Governor of the Bank of Canada from 1987 to 1994

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Their 1994 study The Great Canadian Disinflation won the Canadian Economics Association's Doug Purvis Prize for excellence in economic policy writing

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